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<110> ORIGENE TECHNOLOGIES INC

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<150> US 10/054,935

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<160> 102

<170> PatentIn version 3.1

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Gln Ser Lys Lys Lys Gly Pro Arg Thr Pro Ser Pro Pro Pro Pro Ile	
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Arg Glu Lys Glu Arg Asp Arg Glu Arg Asp Arg Asp Arg Asp His Asp	720	725	730	
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Ser Pro Ser Pro Arg Gln Ser Pro Lys Arg Arg Arg Glu His Ser Pro	835	840	845	
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Asp Ser Asp Ala Tyr Asn Ser Gly Asp Asp Lys Asn Glu Lys His Arg	850	855	860	
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Ser His Leu Thr Glu Asp Arg Gln Gly Arg Trp Lys Glu Glu Asp Arg	880	885	890	
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Lys Pro Glu Arg Lys Glu Ser Ser Arg Arg Tyr Glu Glu Gln Glu Leu	895	900	905	910
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Lys Glu Lys Val Ser Ser Val Asp Lys Gln Arg Glu Gln Thr Glu Ile				

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Pro Arg Gly Lys Gly Tyr Ser Ser Asn Tyr Arg Arg Ser Pro Glu Arg
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Pro Thr Gly Asp Leu Arg Glu Arg Met Lys Asn Lys Arg Gln Asp Val
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Arg Ser Ala Ser Pro Tyr Pro Ser His Ser Leu Ser Ser Pro Gln Arg
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Lys Gln Ser Pro Pro Arg His Arg Ser Pro Met Arg Glu Lys Gly Arg
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His Asp His Glu Arg Thr Ser Gln Ser His Asp Arg Arg His Glu Arg
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Tyr Gly Arg Asn His Leu Arg Glu Glu Ser Ser Arg Thr Glu Ile Arg
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Gly Arg Ser Arg Gly Arg Val Pro Glu Leu Pro Glu Lys Gly Ser Arg
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Gly Ser Arg Gly Ser Gln Ile Asp Ser His Ser Ser Asn Ser Asn Tyr
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Pro Ser Ser Pro Ile Arg His Gln Gly Arg Asn Asp Glu Leu Glu Arg

645

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Arg Glu Leu Glu Arg Glu Arg Ala Arg Glu Arg Glu Arg Glu Arg Glu
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Arg Glu Lys Arg Glu Glu Ile Arg Glu Asp Arg Asn Pro Arg Asp Gly
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His Asp Glu Arg Lys Ser Lys Lys Arg Tyr Arg Asn Glu Gly Ser Pro
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Ser Pro Arg Gln Ser Pro Lys Arg Arg Arg Glu His Ser Pro Asp Ser
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Asp Ala Tyr Asn Ser Gly Asp Asp Lys Asn Glu Lys His Arg Leu Leu
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Ser Gln Val Val Arg Pro Gln Glu Ser Arg Ser Leu Ser Pro Ser His
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Leu Thr Glu Asp Arg Gln Gly Arg Trp Lys Glu Glu Asp Arg Lys Pro
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Glu Arg Lys Glu Ser Ser Arg Arg Tyr Glu Glu Gln Glu Leu Lys Glu
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Asp Arg Glu Thr Ser Asp Arg Ala His Asp Glu Asn Lys Lys Lys Ala
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Ile Glu Arg Gly Asn Ile Glu Thr Thr Ser Glu Asp Gly Gln Val Phe
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Ser Pro Lys Lys Gly Gln Lys Lys Lys Ser Ile Glu Lys Lys Arg Lys
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Asp Glu Ser Lys Leu Asp Asp Ala His Ser Leu Gly Ser Gly Ala
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Gly Glu Gly Tyr Glu Pro Ile Ser Asp Asp Glu Leu Asp Glu Ile
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Leu Leu Lys Phe Thr Pro Gly Ala Val Met Leu Arg Val Gly Ile

1520

1525

1530

Ser Lys Lys Leu Ala Gly Ser Glu Leu Phe Ala Lys Val Lys Glu
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Leu

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 Met Ser Lys Ile Arg Arg Lys Val Thr Val Glu Asn Thr Lys
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 Thr Ile Ser Asp Ser Thr Ser Arg Arg Pro Ser Val Phe Glu Arg Leu
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 Gly Pro Ser Thr Gly Ser Thr Ala Glu Thr Gln Cys Arg Asn Trp Leu
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 aag act ggc aac tgc ctc tat gga aac aca tgt aga ttc gta cat ggc 255
 Lys Thr Gly Asn Cys Leu Tyr Gly Asn Thr Cys Arg Phe Val His Gly
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 cct tca cct cgt ggt aaa ggt tat agc agc aat tat aga agg tca cca 303
 Pro Ser Pro Arg Gly Lys Gly Tyr Ser Ser Asn Tyr Arg Arg Ser Pro
 65 70 75
 gaa aga cct aca ggg gat ctt aga gaa aga atg aag aac aag cgc .caa 351
 Glu Arg Pro Thr Gly Asp Leu Arg Glu Arg Met Lys Asn Lys Arg Gln
 80 85 90
 gac gtg gac act gag ccc cag aaa cga aat aca gag gag tca tcc tca 399
 Asp Val Asp Thr Glu Pro Gln Lys Arg Asn Thr Glu Glu Ser Ser Ser
 95 100 105 110
 cct gtt agg aaa gaa tct tca aga ggg aga cat agg gaa aag gaa gac 447

Pro	Val	Arg	Lys	Glu	Ser	Ser	Arg	Gly	Arg	His	Arg	Glu	Lys	Glu	Asp		
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Ile	Lys	Ile	Thr	Lys	Glu	Arg	Thr	Pro	Glu	Ser	Glu	Glu	Glu	Asn	Val		
			130					135					140				
gaa	tgg	gaa	act	aat	aga	gat	gat	tct	gac	aat	gga	gat	att	aat	tat	543	
Glu	Trp	Glu	Thr	Asn	Arg	Asp	Asp	Ser	Asp	Asn	Gly	Asp	Ile	Asn	Tyr		
		145					150					155					
gat	tat	gtt	cat	gaa	ttg	tca	ttg	gaa	atg	aag	cgt	cag	aag	ata	cag	591	
Asp	Tyr	Val	His	Glu	Leu	Ser	Leu	Glu	Met	Lys	Arg	Gln	Lys	Ile	Gln		
	160					165					170						
agg	gaa	tta	atg	aag	ctg	gaa	caa	gaa	aac	atg	gag	aag	aga	gaa	gaa	639	
Arg	Glu	Leu	Met	Lys	Leu	Glu	Gln	Glu	Asn	Met	Glu	Lys	Arg	Glu	Glu		
	175				180					185					190		
att	atc	att	aaa	aag	gag	gtt	tca	cca	gaa	gtg	gtt	aga	tca	aaa	ttg	687	
Ile	Ile	Ile	Lys	Lys	Glu	Val	Ser	Pro	Glu	Val	Val	Arg	Ser	Lys	Leu		
			195						200					205			
tcc	ccg	tca	cct	tct	cta	aga	aag	tct	agc	aaa	tct	ccg	aag	cga	aaa	735	
Ser	Pro	Ser	Pro	Ser	Leu	Arg	Lys	Ser	Ser	Lys	Ser	Pro	Lys	Arg	Lys		
			210					215					220				
tca	agc	ccg	aag	tcg	tct	tca	gct	agc	aag	aaa	gat	agg	aag	aca	tct	783	
Ser	Ser	Pro	Lys	Ser	Ser	Ser	Ala	Ser	Lys	Lys	Asp	Arg	Lys	Thr	Ser		
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gca	gta	tct	tct	ccc	ctg	ttg	gac	cag	cag	aga	aat	tca	aaa	acc	aac	831	
Ala	Val	Ser	Ser	Pro	Leu	Leu	Asp	Gln	Gln	Arg	Asn	Ser	Lys	Thr	Asn		
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caa	agt	aaa	aag	aaa	gga	cca	cgt	act	cct	agt	cca	ccc	cct	cct	ata	879	
Gln	Ser	Lys	Lys	Lys	Gly	Pro	Arg	Thr	Pro	Ser	Pro	Pro	Pro	Pro	Ile		
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cca	gaa	gat	atc	gct	ctg	ggg	aaa	aaa	tac	aaa	gaa	aaa	tat	aaa	gta	927	
Pro	Glu	Asp	Ile	Ala	Leu	Gly	Lys	Lys	Tyr	Lys	Glu	Lys	Tyr	Lys	Val		
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aaa	gac	agg	ata	gaa	gaa	aaa	aca	aga	gat	gga	aag	gac	aga	gga	cga	975	
Lys	Asp	Arg	Ile	Glu	Glu	Lys	Thr	Arg	Asp	Gly	Lys	Asp	Arg	Gly	Arg		
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gat	ttt	gaa	cga	caa	aga	gaa	aag	aga	gac	aag	cca	agg	tct	act	tcc	1023	
Asp	Phe	Glu	Arg	Gln	Arg	Glu	Lys	Arg	Asp	Lys	Pro	Arg	Ser	Thr	Ser		
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cca	gca	gga	cag	cat	cat	tct	cct	ata	tct	tct	aga	cat	cac	tca	tct	1071	
Pro	Ala	Gly	Gln	His	His	Ser	Pro	Ile	Ser	Ser	Arg	His	His	Ser	Ser		
		320				325					330						
tcc	tca	caa	tca	gga	tca	tct	att	caa	aga	cat	tct	cct	tct	cct	cgt	1119	
Ser	Ser	Gln	Ser	Gly	Ser	Ser	Ile	Gln	Arg	His	Ser	Pro	Ser	Pro	Arg		

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cga aaa aga act cct tca cca tct tat cag cgg aca cta act cca cct				1167
Arg Lys Arg Thr Pro Ser Pro Ser Tyr Gln Arg Thr Leu Thr Pro Pro				
355		360	365	
tta cga cgc tct gcc tct cct tat cct tca cat tct ttg tcg tct ccc				1215
Leu Arg Arg Ser Ala Ser Pro Tyr Pro Ser His Ser Leu Ser Ser Pro				
370		375	380	
cag aga aag cag agt cct cca aga cat cgc tct cca atg cga gag aaa				1263
Gln Arg Lys Gln Ser Pro Pro Arg His Arg Ser Pro Met Arg Glu Lys				
385		390	395	
ggg aga cat gat cat gaa cga act tca cag tct cat gat cga cgc cac				1311
Gly Arg His Asp His Glu Arg Thr Ser Gln Ser His Asp Arg Arg His				
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Glu Arg Arg Glu Asp Thr Arg Gly Lys Arg Asp Arg Glu Lys Asp Ser				
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Arg Glu Glu Arg Glu Tyr Glu Gln Asp Gln Ser Ser Ser Arg Asp His				
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Arg Asp Asp Arg Glu Pro Arg Asp Gly Arg Asp Arg Arg Asp Ala Arg				
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Asp Thr Arg Asp Arg Arg Glu Leu Arg Asp Ser Arg Asp Met Arg Asp				
465		470	475	
tca agg gag atg aga gat tat agc aga gat acc aaa gag agc cgt gat				1551
Ser Arg Glu Met Arg Asp Tyr Ser Arg Asp Thr Lys Glu Ser Arg Asp				
480		485	490	
ccc aga gat tct cgg tcc act cgt gat gcc cat gac tac agg gac cgt				1599
Pro Arg Asp Ser Arg Ser Thr Arg Asp Ala His Asp Tyr Arg Asp Arg				
495		500	505	510
gaa ggt cga gat act cat cga aag gag gat aca tat cca gaa gaa tcc				1647
Glu Gly Arg Asp Thr His Arg Lys Glu Asp Thr Tyr Pro Glu Glu Ser				
515		520	525	
cgg agt tat ggc cga aac cat ttg aga gaa gaa agt tct cgt acg gaa				1695
Arg Ser Tyr Gly Arg Asn His Leu Arg Glu Glu Ser Ser Arg Thr Glu				
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Ile Arg Asn Glu Ser Arg Asn Glu Ser Arg Ser Glu Ile Arg Asn Asp				
545		550	555	
cga atg ggc cga agt agg ggg agg gtt cct gag tta cct gaa aag gga				1791
Arg Met Gly Arg Ser Arg Gly Arg Val Pro Glu Leu Pro Glu Lys Gly				
560		565	570	

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aac tat cat gac agc tgg gaa act cga agt agc tat cct gaa aga gat Asn Tyr His Asp Ser Trp Glu Thr Arg Ser Ser Tyr Pro Glu Arg Asp 595 600 605	1887
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Leu	Ser	Ser	Leu	Leu	Pro	Pro	Pro	Pro	Pro	Val	Ala	Thr	Ala	Thr	
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Ala	Thr	Thr	Val	Pro	Ala	Thr	Leu	Ala	Ala	Thr	Thr	Ala	Ala	Ala	
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Ala	Thr	Ser	Phe	Ser	Thr	Ser	Ala	Ile	Thr	Ile	Ser	Thr	Ser	Ala	
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acc	ccc	acc	aat	acc	acc	aat	aat	act	ttt	gcc	aat	gaa	gac	tca	3537
Thr	Pro	Thr	Asn	Thr	Thr	Asn	Asn	Thr	Phe	Ala	Asn	Glu	Asp	Ser	
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Lys	Arg	Ser	Ser	Ser	Leu	Gly	Ser	Asn	Arg	Ser	Asn	Arg	Ser	His	
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Ser Thr Ser Ser Asp Arg Gln Asp Ser Arg Ser His Ser Ser Arg			
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Ser Phe Asp Ser Arg Asp Arg Leu Gln Glu Arg Asp Arg Tyr Glu			
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His Asp Arg Glu Arg Glu Arg Glu Arg Arg Asp Thr Arg Gln Arg			
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Glu Trp Asp Arg Asp Ala Asp Lys Asp Trp Pro Arg Asn Arg Asp			
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Arg Asp Arg Leu Arg Glu Arg Glu Arg Glu Arg Glu Arg Asp Lys			
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Arg Arg Asp Leu Asp Arg Glu Arg Glu Arg Leu Ile Ser Asp Ser			
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Val Glu Arg Asp Arg Asp Arg Asp Arg Asp Arg Thr Phe Glu Ser			
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985

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Glu Val Lys Leu Trp Arg Lys Ile Asn Ile Asn Glu Ser Ala Lys Ile
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Gly Thr Ser Leu Leu Val Ser Ala Val Gly Leu Gly Val Ala Thr Ala
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Gly Gly Ala Val Thr Ile Thr Ser Asp Leu Ser Leu Ile Phe Cys Asn
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Gln Met Arg Glu Ile Leu Ser Cys Leu Glu Phe Phe Cys Arg Trp Gln
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Gly Cys Gly Asp Arg Gln Leu Leu Gln Cys Gly Arg Asn Ala Ser Ile
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Ala Leu Tyr Asn Ser Val Tyr Phe Ile Val Phe Phe Gly Ser Arg Gly
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Phe Leu Ile Pro Arg Arg Ala Glu Gly Asp Thr Lys Val Ser Gln Ala
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Val Leu Lys Ala Lys Ile Gln Lys Leu Ala Glu Ser Leu Glu Ser Cys
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cct gtt tta caa cag aac act tca gtt gct gca aaa caa ccc cag act Pro Val Leu Gln Gln Asn Thr Ser Val Ala Ala Lys Gln Pro Gln Thr 435 440 445 450	1822
tct gtg gta cag aat caa caa cag ata tca caa cag gga cct ata tat Ser Val Val Gln Asn Gln Gln Gln Ile Ser Gln Gln Gly Pro Ile Tyr 455 460 465	1870
gat gaa gtg gaa ttg gat gca ttg gct gaa att gag cga ata gag aga Asp Glu Val Glu Leu Asp Ala Leu Ala Glu Ile Glu Arg Ile Glu Arg 470 475 480	1918
gaa tca gct att gaa agg gag cgc ttc tca aaa gaa gtt caa gat aaa Glu Ser Ala Ile Glu Arg Glu Arg Phe Ser Lys Glu Val Gln Asp Lys 485 490 495	1966

gat aag cct ttg aaa aaa aga aaa caa gat tct tac cca cag gag gct Asp Lys Pro Leu Lys Lys Arg Lys Gln Asp Ser Tyr Pro Gln Glu Ala 500 505 510	2014
ggg ggt gct aca gga ggt aat aga cca gct tct cag gag acg ggt tct Gly Gly Ala Thr Gly Gly Asn Arg Pro Ala Ser Gln Glu Thr Gly Ser 515 520 525 530	2062
acg gga aat ggg tca agg cca gca tta atg gtt agc att gat ctt cat Thr Gly Asn Gly Ser Arg Pro Ala Leu Met Val Ser Ile Asp Leu His 535 540 545	2110
cag gca gga aga gtg gac tct cag gct tct ata act cag gat tca gac Gln Ala Gly Arg Val Asp Ser Gln Ala Ser Ile Thr Gln Asp Ser Asp 550 555 560	2158
tcc ata aaa aag cct gaa gaa atc aaa caa tgt aat gat gca cct gtt Ser Ile Lys Lys Pro Glu Glu Ile Lys Gln Cys Asn Asp Ala Pro Val 565 570 575	2206
tct gtt ctt cag gaa gat att gtt gga agt ctt aaa tct aca cca gaa Ser Val Leu Gln Glu Asp Ile Val Gly Ser Leu Lys Ser Thr Pro Glu 580 585 590	2254
aac cat cct gag aca cct aaa aaa aag tct gat cct gag ctt tca aag Asn His Pro Glu Thr Pro Lys Lys Lys Ser Asp Pro Glu Leu Ser Lys 595 600 605 610	2302
agt gaa atg aaa caa agt gaa agt aga tta gca gaa tct aaa cca aat Ser Glu Met Lys Gln Ser Glu Ser Arg Leu Ala Glu Ser Lys Pro Asn 615 620 625	2350
gaa aac cga ttg gtg gag aca aaa tca agt gaa aat aag tta gaa act Glu Asn Arg Leu Val Glu Thr Lys Ser Ser Glu Asn Lys Leu Glu Thr 630 635 640	2398
aaa gtt gag acc caa aca gaa gaa ctt aaa cag aat gag agc aga aca Lys Val Glu Thr Gln Thr Glu Glu Leu Lys Gln Asn Glu Ser Arg Thr 645 650 655	2446
act gaa tgc aaa caa aac gag agc acc ata gtt gag cct aaa caa aat Thr Glu Cys Lys Gln Asn Glu Ser Thr Ile Val Glu Pro Lys Gln Asn 660 665 670	2494
gaa aat aga ctg tct gac aca aaa cca aat gac aac aaa caa aat aat Glu Asn Arg Leu Ser Asp Thr Lys Pro Asn Asp Asn Lys Gln Asn Asn 675 680 685 690	2542
ggc aga tca gaa aca aca aaa tca agg cct gaa acc cca aag caa aag Gly Arg Ser Glu Thr Lys Ser Arg Pro Glu Thr Pro Lys Gln Lys 695 700 705	2590
ggt gaa agc cgg cct gag act cca aaa caa aag agt gat ggg cat cct Gly Glu Ser Arg Pro Glu Thr Pro Lys Gln Lys Ser Asp Gly His Pro 710 715 720	2638
gaa acc cca aaa cag aag ggt gat gga agg cct gaa act cca aag caa	2686

Glu Thr Pro Lys Gln Lys Gly Asp Gly Arg Pro Glu Thr Pro Lys Gln	
725 730 735	
aaa ggt gag agc cgc cct gaa act cca aag caa aaa aat gaa ggg cga	2734
Lys Gly Glu Ser Arg Pro Glu Thr Pro Lys Gln Lys Asn Glu Gly Arg	
740 745 750	
cct gaa aca cca aaa cac agg cat gac aat agg agg gat tct gga aag	2782
Pro Glu Thr Pro Lys His Arg His Asp Asn Arg Arg Asp Ser Gly Lys	
755 760 765 770	
cca tct aca gag aaa aaa cct gaa gtg tct aaa cat aaa caa gat act	2830
Pro Ser Thr Glu Lys Lys Pro Glu Val Ser Lys His Lys Gln Asp Thr	
775 780 785	
aaa tct gac tca cct cgg tta aaa tca gaa cga gct gaa gcc tta aag	2878
Lys Ser Asp Ser Pro Arg Leu Lys Ser Glu Arg Ala Glu Ala Leu Lys	
790 795 800	
cag aga cct gat ggg cga tct gtt tct gag tca cta aga cgt gac cat	2926
Gln Arg Pro Asp Gly Arg Ser Val Ser Glu Ser Leu Arg Arg Asp His	
805 810 815	
gat aat aaa caa aaa tca gat gac agg ggt gaa tca gag cga cat cga	2974
Asp Asn Lys Gln Lys Ser Asp Asp Arg Gly Glu Ser Glu Arg His Arg	
820 825 830	
ggg gat cag tct agg gtt cga aga cca gaa aca ttg aga tcc tct agt	3022
Gly Asp Gln Ser Arg Val Arg Arg Pro Glu Thr Leu Arg Ser Ser Ser	
835 840 845 850	
aga aat gaa cat ggc att aaa tct gat agt tca aaa act gat aaa cta	3070
Arg Asn Glu His Gly Ile Lys Ser Asp Ser Ser Lys Thr Asp Lys Leu	
855 860 865	
gaa cga aaa cac agg cat gaa tca ggg gac tca agg gaa aga cca tct	3118
Glu Arg Lys His Arg His Glu Ser Gly Asp Ser Arg Glu Arg Pro Ser	
870 875 880	
tct ggg gaa caa aaa tca aga cct gac agt cct cgt gtt aaa caa gga	3166
Ser Gly Glu Gln Lys Ser Arg Pro Asp Ser Pro Arg Val Lys Gln Gly	
885 890 895	
gat tct aat aaa tca aga tct gat aaa ctt ggt ttt aaa tca cca act	3214
Asp Ser Asn Lys Ser Arg Ser Asp Lys Leu Gly Phe Lys Ser Pro Thr	
900 905 910	
agt aaa gat gac aaa agg aca gag ggt aac aag agt aaa gta gac act	3262
Ser Lys Asp Asp Lys Arg Thr Glu Gly Asn Lys Ser Lys Val Asp Thr	
915 920 925 930	
aat aaa gca cac cct gac aat aag gca gaa ttt cca agt tat ttg ttg	3310
Asn Lys Ala His Pro Asp Asn Lys Ala Glu Phe Pro Ser Tyr Leu Leu	
935 940 945	
ggg ggc agg tct ggt gcg ttg aaa aat ttt gtc att ccg aaa atc aag	3358
Gly Gly Arg Ser Gly Ala Leu Lys Asn Phe Val Ile Pro Lys Ile Lys	

950	955	960	
agg gat aaa gat ggc aat gtt act cag gag aca aag aaa atg gaa atg Arg Asp Lys Asp Gly Asn Val Thr Gln Glu Thr Lys Lys Met Glu Met 965 970 975			3406
aaa gga gag ccg aaa gac aaa gta gaa aaa ata gga tta gtt gaa gat Lys Gly Glu Pro Lys Asp Lys Val Glu Lys Ile Gly Leu Val Glu Asp 980 985 990			3454
cta aat aaa gga gct aag cct gta gtt gtg cta caa aaa ctg tct Leu Asn Lys Gly Ala Lys Pro Val Val Val Leu Gln Lys Leu Ser 995 1000 1005			3499
ttg gat gat gtt cag aaa ctt att aaa gat aga gag gac aaa tca Leu Asp Asp Val Gln Lys Leu Ile Lys Asp Arg Glu Asp Lys Ser 1010 1015 1020			3544
aga agt tcc ctt aaa cct atc aag aat aaa cca tca aag tca aat Arg Ser Ser Leu Lys Pro Ile Lys Asn Lys Pro Ser Lys Ser Asn 1025 1030 1035			3589
aaa ggt agt ata gat caa tca gtg tta aaa gaa tta ccc cct gaa Lys Gly Ser Ile Asp Gln Ser Val Leu Lys Glu Leu Pro Pro Glu 1040 1045 1050			3634
ctc ctg gca gaa att gag tcc acc atg cca ctt tgt gaa cgt gtg Leu Leu Ala Glu Ile Glu Ser Thr Met Pro Leu Cys Glu Arg Val 1055 1060 1065			3679
aaa atg aac aaa cgc aag cgt agc aca gtt aat gaa aag cca aaa Lys Met Asn Lys Arg Lys Arg Ser Thr Val Asn Glu Lys Pro Lys 1070 1075 1080			3724
tat gct gaa atc agt tca gat gaa gat aat gat agt gat gaa gct Tyr Ala Glu Ile Ser Ser Asp Glu Asp Asn Asp Ser Asp Glu Ala 1085 1090 1095			3769
ttt gaa tcc tct agg aaa cga cat aaa aaa gat gat gat aaa gct Phe Glu Ser Ser Arg Lys Arg His Lys Lys Asp Asp Asp Lys Ala 1100 1105 1110			3814
tgg gaa tat gaa gag cgt gac aga aga agc tct ggg gat cat agg Trp Glu Tyr Glu Glu Arg Asp Arg Arg Ser Ser Gly Asp His Arg 1115 1120 1125			3859
aga agt ggc cac tct cat gaa gga aga agg agt tca ggt ggt ggt Arg Ser Gly His Ser His Glu Gly Arg Arg Ser Ser Gly Gly Gly 1130 1135 1140			3904
cgt tat cga aac cga agt ccg tca gat tct gac atg gaa gat tat Arg Tyr Arg Asn Arg Ser Pro Ser Asp Ser Asp Met Glu Asp Tyr 1145 1150 1155			3949
tct cct cct ccc agc ctt agt gag gtt gct agg aaa atg aag aaa Ser Pro Pro Pro Ser Leu Ser Glu Val Ala Arg Lys Met Lys Lys 1160 1165 1170			3994

aaa gaa aaa cag aag aaa agg aaa gca tat gaa cca aaa cta aca Lys Glu Lys Gln Lys Lys Arg Lys Ala Tyr Glu Pro Lys Leu Thr 1175 1180 1185	4039
cct gaa gaa atg atg gac tct tca act ttt aag aga ttc aca gcc Pro Glu Glu Met Met Asp Ser Ser Thr Phe Lys Arg Phe Thr Ala 1190 1195 1200	4084
tca ata gag aat att ttg gat aat ttg gaa gat atg gat ttt act Ser Ile Glu Asn Ile Leu Asp Asn Leu Glu Asp Met Asp Phe Thr 1205 1210 1215	4129
gcg ttt ggt gat gat gat gaa att cct cag gaa ctg ctc tta gga Ala Phe Gly Asp Asp Asp Glu Ile Pro Gln Glu Leu Leu Leu Gly 1220 1225 1230	4174
aaa cat cag ctt aat gaa ctt ggc agt gaa tct gct aaa ata aaa Lys His Gln Leu Asn Glu Leu Gly Ser Glu Ser Ala Lys Ile Lys 1235 1240 1245	4219
gca atg ggt ata atg gat aag ctt tca act gac aaa act gtg aaa Ala Met Gly Ile Met Asp Lys Leu Ser Thr Asp Lys Thr Val Lys 1250 1255 1260	4264
gtc tta aat atc ttg gag aag aat att cag gat ggg tca aag ctt Val Leu Asn Ile Leu Glu Lys Asn Ile Gln Asp Gly Ser Lys Leu 1265 1270 1275	4309
tcc act ttg tta aat cat aat aac gat act gaa gaa gaa gaa agg Ser Thr Leu Leu Asn His Asn Asn Asp Thr Glu Glu Glu Glu Arg 1280 1285 1290	4354
tta tgg aga gac ctt att atg gag aga gtt aca aaa tca gcg gat Leu Trp Arg Asp Leu Ile Met Glu Arg Val Thr Lys Ser Ala Asp 1295 1300 1305	4399
gct tgt ctt aca act atc aac att atg aca tcc cct aac atg cca Ala Cys Leu Thr Thr Ile Asn Ile Met Thr Ser Pro Asn Met Pro 1310 1315 1320	4444
aaa gct gtg tac att gag gat gta att gaa aga gtt ata cag tac Lys Ala Val Tyr Ile Glu Asp Val Ile Glu Arg Val Ile Gln Tyr 1325 1330 1335	4489
act aaa ttt cat ttg cag aat aca ctt tat cct cag tat gat cct Thr Lys Phe His Leu Gln Asn Thr Leu Tyr Pro Gln Tyr Asp Pro 1340 1345 1350	4534
gtt tac aga tta gat cct cat gga gga ggc tta tta agt tca aaa Val Tyr Arg Leu Asp Pro His Gly Gly Gly Leu Leu Ser Ser Lys 1355 1360 1365	4579
gca aaa cgg gct aaa tgt tct acc cat aag cag aga gta ata gta Ala Lys Arg Ala Lys Cys Ser Thr His Lys Gln Arg Val Ile Val 1370 1375 1380	4624

atg	ctt	tat	aac	aaa	gtt	tgt	gac	att	gtt	agc	agc	tta	tca	gaa	4669
Met	Leu	Tyr	Asn	Lys	Val	Cys	Asp	Ile	Val	Ser	Ser	Leu	Ser	Glu	
1385					1390					1395					
ttg	cta	gag	ata	caa	ctt	ctt	aca	gac	aca	aca	att	ctt	cag	gtt	4714
Leu	Leu	Glu	Ile	Gln	Leu	Leu	Thr	Asp	Thr	Thr	Ile	Leu	Gln	Val	
1400					1405					1410					
tca	tct	atg	gga	ata	aca	cca	ttt	ttt	gtg	gaa	aat	gtc	agt	gaa	4759
Ser	Ser	Met	Gly	Ile	Thr	Pro	Phe	Phe	Val	Glu	Asn	Val	Ser	Glu	
1415					1420					1425					
cta	cag	ttg	tgt	gcc	att	aag	tta	gtc	act	gca	gta	ttc	tca	aga	4804
Leu	Gln	Leu	Cys	Ala	Ile	Lys	Leu	Val	Thr	Ala	Val	Phe	Ser	Arg	
1430					1435					1440					
tat	gaa	aaa	cat	agg	cag	tta	att	ttg	gaa	gaa	att	ttt	act	tca	4849
Tyr	Glu	Lys	His	Arg	Gln	Leu	Ile	Leu	Glu	Glu	Ile	Phe	Thr	Ser	
1445					1450					1455					
ctt	gca	aga	tta	cca	acc	agc	aag	agg	agt	tta	agg	aac	ttc	agg	4894
Leu	Ala	Arg	Leu	Pro	Thr	Ser	Lys	Arg	Ser	Leu	Arg	Asn	Phe	Arg	
1460					1465					1470					
tta	aac	agt	agt	gat	atg	gat	gga	gaa	cct	atg	tat	att	cag	atg	4939
Leu	Asn	Ser	Ser	Asp	Met	Asp	Gly	Glu	Pro	Met	Tyr	Ile	Gln	Met	
1475					1480					1485					
gtt	aca	gca	ctg	gtt	tta	caa	ctt	att	cag	tgt	gtg	gta	cac	tta	4984
Val	Thr	Ala	Leu	Val	Leu	Gln	Leu	Ile	Gln	Cys	Val	Val	His	Leu	
1490					1495					1500					
cca	tca	tca	gag	aag	gac	tct	aat	gca	gaa	gaa	gat	tca	aat	aaa	5029
Pro	Ser	Ser	Glu	Lys	Asp	Ser	Asn	Ala	Glu	Glu	Asp	Ser	Asn	Lys	
1505					1510					1515					
aaa	att	gac	cag	gat	gtt	gtc	att	act	aac	tct	tat	gaa	aca	gct	5074
Lys	Ile	Asp	Gln	Asp	Val	Val	Ile	Thr	Asn	Ser	Tyr	Glu	Thr	Ala	
1520					1525					1530					
atg	cga	aca	gcc	caa	aac	ttc	ctc	tcc	atc	ttc	ctt	aaa	aaa	tgt	5119
Met	Arg	Thr	Ala	Gln	Asn	Phe	Leu	Ser	Ile	Phe	Leu	Lys	Lys	Cys	
1535					1540					1545					
ggt	agt	aag	caa	ggt	gaa	gaa	gat	tac	aga	cca	ctg	ttt	gaa	aat	5164
Gly	Ser	Lys	Gln	Gly	Glu	Glu	Asp	Tyr	Arg	Pro	Leu	Phe	Glu	Asn	
1550					1555					1560					
ttt	gtt	caa	gac	ctt	ctt	tca	aca	gtc	aat	aag	cct	gaa	tgg	cca	5209
Phe	Val	Gln	Asp	Leu	Leu	Ser	Thr	Val	Asn	Lys	Pro	Glu	Trp	Pro	
1565					1570					1575					
gct	gct	gaa	cta	ctc	ctt	agt	ttg	tta	ggg	aga	ctg	ttg	gtt	cat	5254
Ala	Ala	Glu	Leu	Leu	Leu	Ser	Leu	Leu	Gly	Arg	Leu	Leu	Val	His	
1580					1585					1590					
cag	ttc	agt	aac	aag	tca	aca	gag	atg	gct	tta	aga	gtg	gca	tct	5299

Gln 1595	Phe	Ser	Asn	Lys	Ser 1600	Thr	Glu	Met	Ala	Leu 1605	Arg	Val	Ala	Ser	
ctt	gat	tac	ctt	gga	act	gtt	gct	gca	cgg	cta	aga	aaa	gat	gct	5344
Leu 1610	Asp	Tyr	Leu	Gly	Thr 1615	Val	Ala	Ala	Arg	Leu 1620	Arg	Lys	Asp	Ala	
gtt	aca	agc	aaa	atg	gat	caa	gga	tct	ata	gaa	cgc	att	tta	aaa	5389
Val 1625	Thr	Ser	Lys	Met	Asp 1630	Gln	Gly	Ser	Ile	Glu 1635	Arg	Ile	Leu	Lys	
cag	gtt	tca	gga	ggg	gaa	gat	gaa	atc	caa	caa	tta	caa	aaa	gca	5434
Gln 1640	Val	Ser	Gly	Gly	Glu 1645	Asp	Glu	Ile	Gln	Gln 1650	Leu	Gln	Lys	Ala	
ttg	ctt	gat	tac	ttg	gat	gaa	aac	act	gag	act	gat	cct	tca	cta	5479
Leu 1655	Leu	Asp	Tyr	Leu	Asp 1660	Glu	Asn	Thr	Glu	Thr 1665	Asp	Pro	Ser	Leu	
gtg	ttt	tct	cgt	aaa	ttc	tat	ata	gcc	cag	tgg	ttt	cga	gac	aca	5524
Val 1670	Phe	Ser	Arg	Lys	Phe 1675	Tyr	Ile	Ala	Gln	Trp 1680	Phe	Arg	Asp	Thr	
act	ctg	gaa	aca	gaa	aaa	gca	atg	aaa	tca	caa	aaa	gat	gaa	gaa	5569
Thr 1685	Leu	Glu	Thr	Glu	Lys 1690	Ala	Met	Lys	Ser	Gln 1695	Lys	Asp	Glu	Glu	
tca	tct	gaa	gga	aca	cat	cat	gca	aag	gaa	att	gag	aca	act	ggc	5614
Ser 1700	Ser	Glu	Gly	Thr	His 1705	His	Ala	Lys	Glu	Ile 1710	Glu	Thr	Thr	Gly	
caa	att	atg	cat	cga	gct	gaa	aac	cga	aaa	aag	ttt	ctt	aga	agc	5659
Gln 1715	Ile	Met	His	Arg	Ala 1720	Glu	Asn	Arg	Lys	Lys 1725	Phe	Leu	Arg	Ser	
att	atc	aaa	acc	aca	cct	tct	cag	ttt	agc	aca	tta	aag	atg	aac	5704
Ile 1730	Ile	Lys	Thr	Thr	Pro 1735	Ser	Gln	Phe	Ser	Thr 1740	Leu	Lys	Met	Asn	
tct	gat	act	gtg	gac	tat	gat	gat	gct	tgc	ttg	att	gtt	cga	tac	5749
Ser 1745	Asp	Thr	Val	Asp	Tyr 1750	Asp	Asp	Ala	Cys	Leu 1755	Ile	Val	Arg	Tyr	
ttg	gcc	tcc	atg	agg	cgg	ttt	gcc	cag	agc	ttt	gat	att	tat	ttg	5794
Leu 1760	Ala	Ser	Met	Arg	Pro 1765	Phe	Ala	Gln	Ser	Phe 1770	Asp	Ile	Tyr	Leu	
aca	cag	atc	cta	cga	gtt	ctt	ggt	gaa	aat	gca	att	gct	gtt	cga	5839
Thr 1775	Gln	Ile	Leu	Arg	Val 1780	Leu	Gly	Glu	Asn	Ala 1785	Ile	Ala	Val	Arg	
aca	aaa	gcc	atg	aag	tgt	ttg	tct	gag	gtt	gtt	gct	gta	gac	ccc	5884
Thr 1790	Lys	Ala	Met	Lys	Cys 1795	Leu	Ser	Glu	Val	Val 1800	Ala	Val	Asp	Pro	
agt	att	cta	gca	agg	ctt	gat	atg	caa	cga	ggt	gtt	cat	gga	cga	5929
Ser	Ile	Leu	Ala	Arg	Leu	Asp	Met	Gln	Arg	Gly	Val	His	Gly	Arg	

1805		1810		1815		
ttg atg gat aat tcg act agt gtc cga gaa gca gca gta gaa tta	5974					
Leu Met Asp Asn Ser Thr Ser Val Arg Glu Ala Ala Val Glu Leu						
1820		1825		1830		
cta ggt cga ttt gtc ctt tgt cga cct cag ctt gct gaa cag tat	6019					
Leu Gly Arg Phe Val Leu Cys Arg Pro Gln Leu Ala Glu Gln Tyr						
1835		1840		1845		
tat gat atg ctg att gaa aga ata ttg gat act ggt atc agt gtc	6064					
Tyr Asp Met Leu Ile Glu Arg Ile Leu Asp Thr Gly Ile Ser Val						
1850		1855		1860		
agg aaa aga gta ata aag att ctc aga gac att tgt att gaa caa	6109					
Arg Lys Arg Val Ile Lys Ile Leu Arg Asp Ile Cys Ile Glu Gln						
1865		1870		1875		
cca aca ttt cca aaa atc aca gaa atg tgt gta aaa atg att cgc	6154					
Pro Thr Phe Pro Lys Ile Thr Glu Met Cys Val Lys Met Ile Arg						
1880		1885		1890		
aga gtc aat gat gaa gag ggc att aag aaa tta gta aat gaa aca	6199					
Arg Val Asn Asp Glu Glu Gly Ile Lys Lys Leu Val Asn Glu Thr						
1895		1900		1905		
ttc cag aaa ctc tgg ttt act cca act cca cac aat gac aaa gaa	6244					
Phe Gln Lys Leu Trp Phe Thr Pro Thr Pro His Asn Asp Lys Glu						
1910		1915		1920		
gca atg aca agg aaa att tta aac att acc gat gtg gtt gca gca	6289					
Ala Met Thr Arg Lys Ile Leu Asn Ile Thr Asp Val Val Ala Ala						
1925		1930		1935		
tgc aga gat act gga tat gac tgg ttt gag caa ctg ctt caa aac	6334					
Cys Arg Asp Thr Gly Tyr Asp Trp Phe Glu Gln Leu Leu Gln Asn						
1940		1945		1950		
ttg ttg aag tcc gaa gag gat tcc tca tat aaa cct gtg aag aaa	6379					
Leu Leu Lys Ser Glu Glu Asp Ser Ser Tyr Lys Pro Val Lys Lys						
1955		1960		1965		
gct tgt act caa ctt gtt gat aac cta gtt gag cac att ctt aaa	6424					
Ala Cys Thr Gln Leu Val Asp Asn Leu Val Glu His Ile Leu Lys						
1970		1975		1980		
tat gag gaa tct cta gct gac tct gac aat aaa ggt gtg aat tct	6469					
Tyr Glu Glu Ser Leu Ala Asp Ser Asp Asn Lys Gly Val Asn Ser						
1985		1990		1995		
gga aga ttg gta gct tgc ata acc act ttg ttc tta ttc agc aaa	6514					
Gly Arg Leu Val Ala Cys Ile Thr Thr Leu Phe Leu Phe Ser Lys						
2000		2005		2010		
ata aga ccc cag ctc atg gtt aaa cat gca atg act atg caa cca	6559					
Ile Arg Pro Gln Leu Met Val Lys His Ala Met Thr Met Gln Pro						
2015		2020		2025		

tac	ctt	acc	act	aaa	tgt	agt	acg	caa	aat	gat	ttc	atg	gtt	atc	6604
Tyr	Leu	Thr	Thr	Lys	Cys	Ser	Thr	Gln	Asn	Asp	Phe	Met	Val	Ile	
2030					2035					2040					
tgc	aat	gtt	gca	aaa	atc	cta	gag	cta	gtt	gta	cca	ctg	atg	gag	6649
Cys	Asn	Val	Ala	Lys	Ile	Leu	Glu	Leu	Val	Val	Pro	Leu	Met	Glu	
2045					2050					2055					
cat	cca	agt	gaa	act	ttt	ctt	gcc	act	att	gag	gaa	gat	cta	atg	6694
His	Pro	Ser	Glu	Thr	Phe	Leu	Ala	Thr	Ile	Glu	Glu	Asp	Leu	Met	
2060					2065					2070					
aag	ctc	atc	atc	aaa	tat	ggc	atg	act	gta	gtg	caa	cat	tgt	gtg	6739
Lys	Leu	Ile	Ile	Lys	Tyr	Gly	Met	Thr	Val	Val	Gln	His	Cys	Val	
2075					2080					2085					
agc	tgt	ctt	gga	gct	gtt	gta	aat	aaa	gtg	aca	caa	aat	ttt	aaa	6784
Ser	Cys	Leu	Gly	Ala	Val	Val	Asn	Lys	Val	Thr	Gln	Asn	Phe	Lys	
2090					2095					2100					
ttt	gtg	tgg	gct	tgt	ttc	aat	aga	tac	tat	ggt	gcc	att	tca	aaa	6829
Phe	Val	Trp	Ala	Cys	Phe	Asn	Arg	Tyr	Tyr	Gly	Ala	Ile	Ser	Lys	
2105					2110					2115					
tta	aaa	agt	caa	cac	caa	gag	gac	cca	aat	aac	act	tca	ctt	cta	6874
Leu	Lys	Ser	Gln	His	Gln	Glu	Asp	Pro	Asn	Asn	Thr	Ser	Leu	Leu	
2120					2125					2130					
aca	aac	aaa	cca	gca	ctt	ctt	aga	tcc	ctt	ttc	acc	gtt	gga	gca	6919
Thr	Asn	Lys	Pro	Ala	Leu	Leu	Arg	Ser	Leu	Phe	Thr	Val	Gly	Ala	
2135					2140					2145					
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Ser	Lys	Val	Asn	Ile	Lys	Asp	Lys	Val	Leu	Glu	Leu	Leu	Met	Tyr	
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Phe	Thr	Lys	His	Ser	Asp	Glu	Glu	Val	Gln	Thr	Lys	Ala	Ile	Ile	
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Gln	Glu	Val	Lys	Asn	Leu	Tyr	Asn	Asn	Ile	Leu	Ser	Asp	Lys	Asn	
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Ser	Ser	Val	Asn	Leu	Lys	Ile	Gln	Val	Leu	Lys	Asn	Leu	Gln	Thr	
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Trp	Lys	Lys	Val	Ala	Lys	Gln	Glu	Asp	Leu	Lys	Glu	Met	Gly	Asp	
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Val	Ser	Ser	Gly	Met	Ser	Ser	Ser	Ile	Met	Gln	Leu	Tyr	Leu	Lys	
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Gln	Val	Leu	Glu	Ala	Phe	Phe	His	Thr	Gln	Ser	Ser	Val	Arg	His	
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His	Pro	Val	Gln	Cys	Val	Pro	Tyr	Leu	Ile	Ala	Met	Gly	Thr	Asp	
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Pro	Glu	Pro	Ala	Met	Arg	Asn	Lys	Ala	Asp	Gln	Gln	Leu	Val	Glu	
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Ile	Asp	Lys	Lys	Tyr	Ala	Gly	Phe	Ile	His	Met	Lys	Ala	Val	Ala	
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Leu	Lys	Asp	Pro	Val	Arg	Gly	Phe	Arg	Gln	Asp	Glu	Ser	Ser	Ser	
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Ala	Leu	Cys	Ser	His	Leu	Tyr	Ser	Met	Ile	Arg	Gly	Asn	Arg	Gln	
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Thr	Ala	Lys	Thr	Asp	Val	Thr	Met	Leu	Leu	Tyr	Ile	Ala	Asp	Asn	
2420					2425					2430					
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2435					2440					2445					
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Met 2450	His	His	Ile	Asp	Ile 2455	Thr	Leu	Ser	Val	Ser 2460	Gly	Ser	Asn	Leu	
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Leu	Gln	Ser	Phe	Lys	Glu	Ser	Met	Val	Lys	Asp	Lys	Arg	Lys	Glu	
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Arg	Lys	Ser	Ser	Pro	Ser	Lys	Glu	Asn	Glu	Ser	Ser	Asp	Ser	Glu	
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Glu	Glu	Val	Ser	Arg	Pro	Arg	Lys	Ser	Arg	Lys	Arg	Val	Asp	Ser	
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Cys	Leu	Pro	Glu	Asn	Ser	Ala	Pro	Leu	Ile	Glu	Phe	Ala	Asn	Val	
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Ser	Glu	Ser	Ala	Lys	Val	Tyr	Asp	Lys	Ala	Ile	Asn	Arg	Lys	Thr	
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Asp	Met	Ala	Asn	Ser	Lys	Ile	Thr	Glu	Glu	Val	Lys	Arg	Ser	Ile	
gta 2615	aaa	cag	tat	cta	gat 2620	ttc	aaa	ctt	ctc	atg 2625	gaa	cat	ctg	gac	8359
Val	Lys	Gln	Tyr	Leu	Asp	Phe	Lys	Leu	Leu	Met	Glu	His	Leu	Asp	
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Pro	Asp	Glu	Glu	Glu	Glu	Glu	Gly	Glu	Val	Ser	Ala	Ser	Thr	Asn	
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Ala	Arg	Asn	Lys	Ala	Ile	Thr	Ser	Leu	Leu	Gly	Gly	Gly	Ser	Pro	
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Lys	Asn	Asn	Thr	Ala	Ala	Glu	Thr	Glu	Asp	Asp	Glu	Ser	Asp	Gly	

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 Glu Asp Arg Gly Gly Gly Thr Ser Gly Val Arg Arg Arg Arg Ser
 2675 2680 2685

caa cgt att tcg cag cgt att acg taa aatgattttt atgtgcttat 8586
 Gln Arg Ile Ser Gln Arg Ile Thr
 2690 2695

atatgtcagt ctattaaatg tacaccaagt aatgtaatac ttaaaagaga aaacattttg 8646

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gacaataaaa aaacagaaat gagattt 8733

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 <211> 2697
 <212> PRT
 <213> Homo sapiens

<400> 12

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Ala Ser Leu Thr Asp Leu Leu Asn Gln Leu Pro Leu Pro Ser Pro Leu
 20 25 30

Pro Ala Thr Thr Thr Lys Ser Leu Leu Phe Asn Ala Arg Ile Ala Glu
 35 40 45

Glu Val Asn Cys Leu Leu Ala Cys Arg Asp Asp Asn Leu Val Ser Gln
 50 55 60

Leu Val His Ser Leu Asn Gln Val Ser Thr Asp His Ile Glu Leu Lys
 65 70 75 80

Asp Asn Leu Gly Ser Asp Asp Pro Glu Gly Asp Ile Pro Val Leu Leu
 85 90 95

Gln Ala Val Leu Ala Arg Ser Pro Asn Val Phe Arg Glu Lys Ser Met
 100 105 110

Gln Asn Arg Tyr Val Gln Ser Gly Met Met Met Ser Gln Tyr Lys Leu
 115 120 125

Ser Gln Asn Ser Met His Ser Ser Pro Ala Ser Ser Asn Tyr Gln Gln

130

135

140

Thr Thr Ile Ser His Ser Pro Ser Ser Arg Phe Val Pro Pro Gln Thr
 145 150 155 160

Ser Ser Gly Asn Arg Phe Met Pro Gln Gln Asn Ser Pro Val Pro Ser
 165 170 175

Pro Tyr Ala Pro Gln Ser Pro Ala Gly Tyr Met Pro Tyr Ser His Pro
 180 185 190

Ser Ser Tyr Thr Thr His Pro Gln Met Gln Gln Ala Ser Val Ser Ser
 195 200 205

Pro Ile Val Ala Gly Gly Leu Arg Asn Ile His Asp Asn Lys Val Ser
 210 215 220

Gly Pro Leu Ser Gly Asn Ser Ala Asn His His Ala Asp Asn Pro Arg
 225 230 235 240

His Gly Ser Ser Glu Asp Tyr Leu His Met Val His Arg Leu Ser Ser
 245 250 255

Asp Asp Gly Asp Ser Ser Thr Met Arg Asn Ala Ala Ser Phe Pro Leu
 260 265 270

Arg Ser Pro Gln Pro Val Cys Ser Pro Ala Gly Ser Glu Gly Thr Pro
 275 280 285

Lys Gly Ser Arg Pro Pro Leu Ile Leu Gln Ser Gln Ser Leu Pro Cys
 290 295 300

Ser Ser Pro Arg Asp Val Pro Pro Asp Ile Leu Leu Asp Ser Pro Glu
 305 310 315 320

Arg Lys Gln Lys Lys Gln Lys Lys Met Lys Leu Gly Lys Asp Glu Lys
 325 330 335

Glu Gln Ser Glu Lys Ala Ala Met Tyr Asp Ile Ile Ser Ser Pro Ser
 340 345 350

Lys Asp Ser Thr Lys Leu Thr Leu Arg Leu Ser Arg Val Arg Ser Ser
 355 360 365

Asp Met Asp Gln Gln Glu Asp Met Ile Ser Gly Val Glu Asn Ser Asn.
370 375 380

Val Ser Glu Asn Asp Ile Pro Phe Asn Val Gln Tyr Pro Gly Gln Thr
385 390 395 400

Ser Lys Thr Pro Ile Thr Pro Gln Asp Ile Asn Arg Pro Leu Asn Ala
405 410 415

Ala Gln Cys Leu Ser Gln Gln Glu Gln Thr Ala Phe Leu Pro Ala Asn
420 425 430

Gln Val Pro Val Leu Gln Gln Asn Thr Ser Val Ala Ala Lys Gln Pro
435 440 445

Gln Thr Ser Val Val Gln Asn Gln Gln Gln Ile Ser Gln Gln Gly Pro
450 455 460

Ile Tyr Asp Glu Val Glu Leu Asp Ala Leu Ala Glu Ile Glu Arg Ile
465 470 475 480

Glu Arg Glu Ser Ala Ile Glu Arg Glu Arg Phe Ser Lys Glu Val Gln
485 490 495

Asp Lys Asp Lys Pro Leu Lys Lys Arg Lys Gln Asp Ser Tyr Pro Gln
500 505 510

Glu Ala Gly Gly Ala Thr Gly Gly Asn Arg Pro Ala Ser Gln Glu Thr
515 520 525

Gly Ser Thr Gly Asn Gly Ser Arg Pro Ala Leu Met Val Ser Ile Asp
530 535 540

Leu His Gln Ala Gly Arg Val Asp Ser Gln Ala Ser Ile Thr Gln Asp
545 550 555 560

Ser Asp Ser Ile Lys Lys Pro Glu Glu Ile Lys Gln Cys Asn Asp Ala
565 570 575

Pro Val Ser Val Leu Gln Glu Asp Ile Val Gly Ser Leu Lys Ser Thr
580 585 590

Pro Glu Asn His Pro Glu Thr Pro Lys Lys Lys Ser Asp Pro Glu Leu
595 600 605

Ser Lys Ser Glu Met Lys Gln Ser Glu Ser Arg Leu Ala Glu Ser Lys
610 615 620

Pro Asn Glu Asn Arg Leu Val Glu Thr Lys Ser Ser Glu Asn Lys Leu
625 630 635 640

Glu Thr Lys Val Glu Thr Gln Thr Glu Glu Leu Lys Gln Asn Glu Ser
645 650 655

Arg Thr Thr Glu Cys Lys Gln Asn Glu Ser Thr Ile Val Glu Pro Lys
660 665 670

Gln Asn Glu Asn Arg Leu Ser Asp Thr Lys Pro Asn Asp Asn Lys Gln
675 680 685

Asn Asn Gly Arg Ser Glu Thr Thr Lys Ser Arg Pro Glu Thr Pro Lys
690 695 700

Gln Lys Gly Glu Ser Arg Pro Glu Thr Pro Lys Gln Lys Ser Asp Gly
705 710 715 720

His Pro Glu Thr Pro Lys Gln Lys Gly Asp Gly Arg Pro Glu Thr Pro
725 730 735

Lys Gln Lys Gly Glu Ser Arg Pro Glu Thr Pro Lys Gln Lys Asn Glu
740 745 750

Gly Arg Pro Glu Thr Pro Lys His Arg His Asp Asn Arg Arg Asp Ser
755 760 765

Gly Lys Pro Ser Thr Glu Lys Lys Pro Glu Val Ser Lys His Lys Gln
770 775 780

Asp Thr Lys Ser Asp Ser Pro Arg Leu Lys Ser Glu Arg Ala Glu Ala
785 790 795 800

Leu Lys Gln Arg Pro Asp Gly Arg Ser Val Ser Glu Ser Leu Arg Arg
805 810 815

Asp His Asp Asn Lys Gln Lys Ser Asp Asp Arg Gly Glu Ser Glu Arg
820 825 830

His Arg Gly Asp Gln Ser Arg Val Arg Arg Pro Glu Thr Leu Arg Ser
835 840 845

Ser Ser Arg Asn Glu His Gly Ile Lys Ser Asp Ser Ser Lys Thr Asp
850 855 860

Lys Leu Glu Arg Lys His Arg His Glu Ser Gly Asp Ser Arg Glu Arg
865 870 875 880

Pro Ser Ser Gly Glu Gln Lys Ser Arg Pro Asp Ser Pro Arg Val Lys
885 890 895

Gln Gly Asp Ser Asn Lys Ser Arg Ser Asp Lys Leu Gly Phe Lys Ser
900 905 910

Pro Thr Ser Lys Asp Asp Lys Arg Thr Glu Gly Asn Lys Ser Lys Val
915 920 925

Asp Thr Asn Lys Ala His Pro Asp Asn Lys Ala Glu Phe Pro Ser Tyr
930 935 940

Leu Leu Gly Gly Arg Ser Gly Ala Leu Lys Asn Phe Val Ile Pro Lys
945 950 955 960

Ile Lys Arg Asp Lys Asp Gly Asn Val Thr Gln Glu Thr Lys Lys Met
965 970 975

Glu Met Lys Gly Glu Pro Lys Asp Lys Val Glu Lys Ile Gly Leu Val
980 985 990

Glu Asp Leu Asn Lys Gly Ala Lys Pro Val Val Val Leu Gln Lys Leu
995 1000 1005

Ser Leu Asp Asp Val Gln Lys Leu Ile Lys Asp Arg Glu Asp Lys
1010 1015 1020

Ser Arg Ser Ser Leu Lys Pro Ile Lys Asn Lys Pro Ser Lys Ser
1025 1030 1035

Asn Lys Gly Ser Ile Asp Gln Ser Val Leu Lys Glu Leu Pro Pro

1040

1045

1050

Glu Leu Leu Ala Glu Ile Glu Ser Thr Met Pro Leu Cys Glu Arg
 1055 1060 1065

Val Lys Met Asn Lys Arg Lys Arg Ser Thr Val Asn Glu Lys Pro
 1070 1075 1080

Lys Tyr Ala Glu Ile Ser Ser Asp Glu Asp Asn Asp Ser Asp Glu
 1085 1090 1095

Ala Phe Glu Ser Ser Arg Lys Arg His Lys Lys Asp Asp Asp Lys
 1100 1105 1110

Ala Trp Glu Tyr Glu Glu Arg Asp Arg Arg Ser Ser Gly Asp His
 1115 1120 1125

Arg Arg Ser Gly His Ser His Glu Gly Arg Arg Ser Ser Gly Gly
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Gly Arg Tyr Arg Asn Arg Ser Pro Ser Asp Ser Asp Met Glu Asp
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Tyr Ser Pro Pro Pro Ser Leu Ser Glu Val Ala Arg Lys Met Lys
 1160 1165 1170

Lys Lys Glu Lys Gln Lys Lys Arg Lys Ala Tyr Glu Pro Lys Leu
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Thr Pro Glu Glu Met Met Asp Ser Ser Thr Phe Lys Arg Phe Thr
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Ala Ser Ile Glu Asn Ile Leu Asp Asn Leu Glu Asp Met Asp Phe
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Thr Ala Phe Gly Asp Asp Asp Glu Ile Pro Gln Glu Leu Leu Leu
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Gly Lys His Gln Leu Asn Glu Leu Gly Ser Glu Ser Ala Lys Ile
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Lys Ala Met Gly Ile Met Asp Lys Leu Ser Thr Asp Lys Thr Val
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Lys Val Leu Asn Ile Leu Glu Lys Asn Ile Gln Asp Gly Ser Lys
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Leu Ser Thr Leu Leu Asn His Asn Asn Asp Thr Glu Glu Glu Glu
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Arg Leu Trp Arg Asp Leu Ile Met Glu Arg Val Thr Lys Ser Ala
1295 1300 1305

Asp Ala Cys Leu Thr Thr Ile Asn Ile Met Thr Ser Pro Asn Met
1310 1315 1320

Pro Lys Ala Val Tyr Ile Glu Asp Val Ile Glu Arg Val Ile Gln
1325 1330 1335

Tyr Thr Lys Phe His Leu Gln Asn Thr Leu Tyr Pro Gln Tyr Asp
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Pro Val Tyr Arg Leu Asp Pro His Gly Gly Gly Leu Leu Ser Ser
1355 1360 1365

Lys Ala Lys Arg Ala Lys Cys Ser Thr His Lys Gln Arg Val Ile
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Val Met Leu Tyr Asn Lys Val Cys Asp Ile Val Ser Ser Leu Ser
1385 1390 1395

Glu Leu Leu Glu Ile Gln Leu Leu Thr Asp Thr Thr Ile Leu Gln
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Val Ser Ser Met Gly Ile Thr Pro Phe Phe Val Glu Asn Val Ser
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Glu Leu Gln Leu Cys Ala Ile Lys Leu Val Thr Ala Val Phe Ser
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Arg Tyr Glu Lys His Arg Gln Leu Ile Leu Glu Glu Ile Phe Thr
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Ser Leu Ala Arg Leu Pro Thr Ser Lys Arg Ser Leu Arg Asn Phe
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Arg Leu Asn Ser Ser Asp Met Asp Gly Glu Pro Met Tyr Ile Gln
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Met Val Thr Ala Leu Val Leu Gln Leu Ile Gln Cys Val Val His
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Leu Pro Ser Ser Glu Lys Asp Ser Asn Ala Glu Glu Asp Ser Asn
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Lys Lys Ile Asp Gln Asp Val Val Ile Thr Asn Ser Tyr Glu Thr
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Ala Met Arg Thr Ala Gln Asn Phe Leu Ser Ile Phe Leu Lys Lys
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Cys Gly Ser Lys Gln Gly Glu Glu Asp Tyr Arg Pro Leu Phe Glu
1550 1555 1560

Asn Phe Val Gln Asp Leu Leu Ser Thr Val Asn Lys Pro Glu Trp
1565 1570 1575

Pro Ala Ala Glu Leu Leu Leu Ser Leu Leu Gly Arg Leu Leu Val
1580 1585 1590

His Gln Phe Ser Asn Lys Ser Thr Glu Met Ala Leu Arg Val Ala
1595 1600 1605

Ser Leu Asp Tyr Leu Gly Thr Val Ala Ala Arg Leu Arg Lys Asp
1610 1615 1620

Ala Val Thr Ser Lys Met Asp Gln Gly Ser Ile Glu Arg Ile Leu
1625 1630 1635

Lys Gln Val Ser Gly Gly Glu Asp Glu Ile Gln Gln Leu Gln Lys
1640 1645 1650

Ala Leu Leu Asp Tyr Leu Asp Glu Asn Thr Glu Thr Asp Pro Ser
1655 1660 1665

Leu Val Phe Ser Arg Lys Phe Tyr Ile Ala Gln Trp Phe Arg Asp
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Thr Thr Leu Glu Thr Glu Lys Ala Met Lys Ser Gln Lys Asp Glu
1685 1690 1695

Glu Ser Ser Glu Gly Thr His His Ala Lys Glu Ile Glu Thr Thr
1700 1705 1710

Gly Gln Ile Met His Arg Ala Glu Asn Arg Lys Lys Phe Leu Arg
1715 1720 1725

Ser Ile Ile Lys Thr Thr Pro Ser Gln Phe Ser Thr Leu Lys Met
1730 1735 1740

Asn Ser Asp Thr Val Asp Tyr Asp Asp Ala Cys Leu Ile Val Arg
1745 1750 1755

Tyr Leu Ala Ser Met Arg Pro Phe Ala Gln Ser Phe Asp Ile Tyr
1760 1765 1770

Leu Thr Gln Ile Leu Arg Val Leu Gly Glu Asn Ala Ile Ala Val
1775 1780 1785

Arg Thr Lys Ala Met Lys Cys Leu Ser Glu Val Val Ala Val Asp
1790 1795 1800

Pro Ser Ile Leu Ala Arg Leu Asp Met Gln Arg Gly Val His Gly
1805 1810 1815

Arg Leu Met Asp Asn Ser Thr Ser Val Arg Glu Ala Ala Val Glu
1820 1825 1830

Leu Leu Gly Arg Phe Val Leu Cys Arg Pro Gln Leu Ala Glu Gln
1835 1840 1845

Tyr Tyr Asp Met Leu Ile Glu Arg Ile Leu Asp Thr Gly Ile Ser
1850 1855 1860

Val Arg Lys Arg Val Ile Lys Ile Leu Arg Asp Ile Cys Ile Glu
1865 1870 1875

Gln Pro Thr Phe Pro Lys Ile Thr Glu Met Cys Val Lys Met Ile
1880 1885 1890

Arg Arg Val Asn Asp Glu Glu Gly Ile Lys Lys Leu Val Asn Glu

1895	1900	1905
Thr Phe Gln Lys Leu Trp 1910	Phe Thr Pro Thr Pro 1915	His Asn Asp Lys 1920
Glu Ala Met Thr Arg Lys 1925	Ile Leu Asn Ile Thr 1930	Asp Val Val Ala 1935
Ala Cys Arg Asp Thr Gly 1940	Tyr Asp Trp Phe Glu 1945	Gln Leu Leu Gln 1950
Asn Leu Leu Lys Ser Glu 1955	Glu Asp Ser Ser Tyr 1960	Lys Pro Val Lys 1965
Lys Ala Cys Thr Gln Leu 1970	Val Asp Asn Leu Val 1975	Glu His Ile Leu 1980
Lys Tyr Glu Glu Ser Leu 1985	Ala Asp Ser Asp Asn 1990	Lys Gly Val Asn 1995
Ser Gly Arg Leu Val Ala 2000	Cys Ile Thr Thr Leu 2005	Phe Leu Phe Ser 2010
Lys Ile Arg Pro Gln Leu 2015	Met Val Lys His Ala 2020	Met Thr Met Gln 2025
Pro Tyr Leu Thr Thr Lys 2030	Cys Ser Thr Gln Asn 2035	Asp Phe Met Val 2040
Ile Cys Asn Val Ala Lys 2045	Ile Leu Glu Leu Val 2050	Val Pro Leu Met 2055
Glu His Pro Ser Glu Thr 2060	Phe Leu Ala Thr Ile 2065	Glu Glu Asp Leu 2070
Met Lys Leu Ile Ile Lys 2075	Tyr Gly Met Thr Val 2080	Val Gln His Cys 2085
Val Ser Cys Leu Gly Ala 2090	Val Val Asn Lys Val 2095	Thr Gln Asn Phe 2100
Lys Phe Val Trp Ala Cys 2105	Phe Asn Arg Tyr Tyr 2110	Gly Ala Ile Ser 2115

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Leu	Thr	Asn	Lys	Pro	Ala	Leu	Leu	Arg	Ser	Leu	Phe	Thr	Val	Gly
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Ala	Leu	Cys	Arg	His	Phe	Asp	Phe	Asp	Leu	Glu	Asp	Phe	Lys	Gly
2150						2155					2160			
Asn	Ser	Lys	Val	Asn	Ile	Lys	Asp	Lys	Val	Leu	Glu	Leu	Leu	Met
2165						2170					2175			
Tyr	Phe	Thr	Lys	His	Ser	Asp	Glu	Glu	Val	Gln	Thr	Lys	Ala	Ile
2180						2185					2190			
Ile	Gly	Leu	Gly	Phe	Ala	Phe	Ile	Gln	His	Pro	Ser	Leu	Met	Phe
2195						2200					2205			
Glu	Gln	Glu	Val	Lys	Asn	Leu	Tyr	Asn	Asn	Ile	Leu	Ser	Asp	Lys
2210						2215					2220			
Asn	Ser	Ser	Val	Asn	Leu	Lys	Ile	Gln	Val	Leu	Lys	Asn	Leu	Gln
2225						2230					2235			
Thr	Tyr	Leu	Gln	Glu	Glu	Asp	Thr	Arg	Met	Gln	Gln	Ala	Asp	Arg
2240						2245					2250			
Asp	Trp	Lys	Lys	Val	Ala	Lys	Gln	Glu	Asp	Leu	Lys	Glu	Met	Gly
2255						2260					2265			
Asp	Val	Ser	Ser	Gly	Met	Ser	Ser	Ser	Ile	Met	Gln	Leu	Tyr	Leu
2270						2275					2280			
Lys	Gln	Val	Leu	Glu	Ala	Phe	Phe	His	Thr	Gln	Ser	Ser	Val	Arg
2285						2290					2295			
His	Phe	Ala	Leu	Asn	Val	Ile	Ala	Leu	Thr	Leu	Asn	Gln	Gly	Leu
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Ala Gly Met Lys Met Ser Tyr Gln Val Gln Gln Ala Ile Asn Thr
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Gln His Arg Arg Ala Phe Leu Ile Ser Leu Leu Asn Leu Phe Asp
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Asp Thr Ala Lys Thr Asp Val Thr Met Leu Leu Tyr Ile Ala Asp
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Asn Leu Ala Cys Phe Pro Tyr Gln Thr Gln Glu Glu Pro Leu Phe
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Ile Met His His Ile Asp Ile Thr Leu Ser Val Ser Gly Ser Asn
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Leu Leu Gln Ser Phe Lys Glu Ser Met Val Lys Asp Lys Arg Lys
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Glu Arg Lys Ser Ser Pro Ser Lys Glu Asn Glu Ser Ser Asp Ser
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Lys Cys Leu Pro Glu Asn Ser Ala Pro Leu Ile Glu Phe Ala Asn
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Val Ser Gln Gly Ile Leu Leu Leu Leu Met Leu Lys Gln His Leu
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Lys Asn Leu Cys Gly Phe Ser Asp Ser Lys Ile Gln Lys Tyr Ser
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Pro Ser Glu Ser Ala Lys Val Tyr Asp Lys Ala Ile Asn Arg Lys
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Thr Gly Val His Phe His Pro Lys Gln Thr Leu Asp Phe Leu Arg
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Ile Val Lys Gln Tyr Leu Asp Phe Lys Leu Leu Met Glu His Leu
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Pro Lys Asn Asn Thr Ala Ala Glu Thr Glu Asp Asp Glu Ser Asp
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atg gcg cac gaa tcc gag agg agc tct cgt ctc ggg gtg ccc tgc ggg Met Ala His Glu Ser Glu Arg Ser Ser Arg Leu Gly Val Pro Cys Gly	168
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gag ccg gca gag ctc gga ggt gat gct agc gag gag gat cac ccc caa Glu Pro Ala Glu Leu Gly Gly Asp Ala Ser Glu Glu Asp His Pro Gln	216
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35 40 45	
gcc cac cag aac gca tgt tct act gac cct cct gta atg gtg ata att Ala His Gln Asn Ala Cys Ser Thr Asp Pro Pro Val Met Val Ile Ile	312
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65 70 75 80	
cct gag ggt cac aat aat cct cag gtc atg gac aca gag cat agc aac Pro Glu Gly His Asn Asn Pro Gln Val Met Asp Thr Glu His Ser Asn	408
85 90 95	
ccc cca gat tct ggg tcc tcc gtg ccc acg gat ccc acc tgg ggc cca Pro Pro Asp Ser Gly Ser Ser Val Pro Thr Asp Pro Thr Trp Gly Pro	456
100 105 110	
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115 120 125	
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Thr Pro Gly Gly Gly Val Glu Arg Lys Pro Leu Val Ala Ser Thr Thr	
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Ala Leu Ser Ala Thr Glu Ser Leu Thr Leu Leu Ser Thr Ser Ala Gly	
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Thr Ala Thr Ala Pro Gly Leu Pro Ala Phe Asn Lys Phe Val Leu Met	
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Lys Ala Val Glu Pro Lys Asn Lys Ala Asp Glu Asn Thr Pro Pro Gly	
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Ser Glu Gly Ser Ala Ile Ser Gly Val Ala Glu Ser Ser Thr Ala Thr	
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Arg Met Gln Leu Ser Lys Leu Val Thr Ser Leu Pro Ser Trp Ala Leu	
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Leu Thr Asn His Phe Lys Ser Thr Gly Ser Phe Pro Phe Pro Tyr Val	
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Leu Glu Pro Leu Gly Ala Ser Pro Ser Glu Thr Ser Lys Leu Gln Gln	
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cag	cag	cat	gtc	cgg	atg	cac	ctg	ggg	ggc	cag	atc	ccc	aac	ggg	ggg	2280	
Gln	Gln	His	Val	Arg	Met	His	Leu	Gly	Gly	Gln	Ile	Pro	Asn	Gly	Gly		
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act	gca	ctc	cct	gaa	ggg	gga	gga	gct	gct	cag	gag	aat	ggc	tcc	gag	2328	
Thr	Ala	Leu	Pro	Glu	Gly	Gly	Gly	Ala	Ala	Gln	Glu	Asn	Gly	Ser	Glu		
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Gln	Ser	Thr	Val	Ser	Gly	Ala	Gly	Ser	Phe	Pro	Gln	Gln	Ser	Gln			
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Ala	Thr	Ala	Gly	Lys	Glu	Met	Asp	Ser	Asn	Glu	Lys	Thr	Thr	Gln	Gln		
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Ser	Ser	Leu	Pro	Pro	Pro	Pro	Pro	Pro	Asp	Ser	Leu	Asp	Gln	Pro	Gln		
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cca	atg	gag	cag	gga	agc	agt	ggg	gtt	tta	gga	ggc	aag	gaa	gag	ggg	2712	
Pro	Met	Glu	Gln	Gly	Ser	Ser	Gly	Val	Leu	Gly	Gly	Lys	Glu	Glu	Gly		
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ggc	aaa	ccg	gag	aga	agc	tca	agt	ccg	gca	tca	gca	ctc	acc	cca	gaa	2760	
Gly	Lys	Pro	Glu	Arg	Ser	Ser	Ser	Pro	Ala	Ser	Ala	Leu	Thr	Pro	Glu		
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ggg	gaa	gcc	acc	agc	gtg	acc	ttg	gta	gag	gag	ctg	agc	ctg	cag	gag	2808	
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Val	Cys	Ala	Lys	Cys	Cys	Ala	Gln	Phe	Thr	Asp	Pro	Thr	Glu	Phe	Leu
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Ala	His	Gln	Asn	Ala	Cys	Ser	Thr	Asp	Pro	Pro	Val	Met	Val	Ile	Ile
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Gly	Gly	Gln	Glu	Asn	Pro	Asn	Asn	Ser	Ser	Ala	Ser	Ser	Glu	Pro	Arg
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Pro	Glu	Gly	His	Asn	Asn	Pro	Gln	Val	Met	Asp	Thr	Glu	His	Ser	Asn
			85						90					95	

Pro	Pro	Asp	Ser	Gly	Ser	Ser	Val	Pro	Thr	Asp	Pro	Thr	Trp	Gly	Pro
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Glu	Arg	Arg	Gly	Glu	Glu	Ser	Ser	Gly	His	Phe	Leu	Val	Ala	Ala	Thr
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Gly	Thr	Ala	Ala	Gly	Gly	Gly	Gly	Gly	Leu	Ile	Leu	Ala	Ser	Pro	Lys
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Pro Pro Pro Pro Pro Pro Pro Pro Gly Val Gly Ser Gly His Leu Asn
165 170 175

Ile Pro Leu Ile Leu Glu Glu Leu Arg Val Leu Gln Gln Arg Gln Ile
180 185 190

His Gln Met Gln Met Thr Glu Gln Ile Cys Arg Gln Val Leu Leu Leu
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Gly Ser Leu Gly Gln Thr Val Gly Ala Pro Ala Ser Pro Ser Glu Leu
210 215 220

Pro Gly Thr Gly Thr Ala Ser Ser Thr Lys Pro Leu Leu Pro Leu Phe
225 230 235 240

Ser Pro Ile Lys Pro Val Gln Thr Ser Lys Thr Leu Ala Ser Ser Ser
245 250 255

Ser Ser Ser Ser Ser Ser Ser Gly Ala Glu Thr Pro Lys Gln Ala Phe
260 265 270

Phe His Leu Tyr His Pro Leu Gly Ser Gln His Pro Phe Ser Ala Gly
275 280 285

Gly Val Gly Arg Ser His Lys Pro Thr Pro Ala Pro Ser Pro Ala Leu
290 295 300

Pro Gly Ser Thr Asp Gln Leu Ile Ala Ser Pro His Leu Ala Phe Pro
305 310 315 320

Ser Thr Thr Gly Leu Leu Ala Ala Gln Cys Leu Gly Ala Ala Arg Gly
325 330 335

Leu Glu Ala Thr Ala Ser Pro Gly Leu Leu Lys Pro Lys Asn Gly Ser
340 345 350

Gly Glu Leu Ser Tyr Gly Glu Val Met Gly Pro Leu Glu Lys Pro Gly
355 360 365

Gly Arg His Lys Cys Arg Phe Cys Ala Lys Val Phe Gly Ser Asp Ser

370

375

380

Ala Leu Gln Ile His Leu Arg Ser His Thr Gly Glu Arg Pro Tyr Lys
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His Phe His Arg His Arg Glu Lys Tyr Pro His Val Gln Met Asn Pro
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His Pro Val Pro Glu His Leu Asp Tyr Val Ile Thr Ser Ser Gly Leu
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Pro Tyr Gly Met Ser Val Pro Pro Glu Lys Ala Glu Glu Glu Ala Ala
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Thr Pro Gly Gly Gly Val Glu Arg Lys Pro Leu Val Ala Ser Thr Thr
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Ala Leu Ser Ala Thr Glu Ser Leu Thr Leu Leu Ser Thr Ser Ala Gly
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Lys Ala Val Glu Pro Lys Asn Lys Ala Asp Glu Asn Thr Pro Pro Gly
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Ser Glu Gly Ser Ala Ile Ser Gly Val Ala Glu Ser Ser Thr Ala Thr
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Arg Met Gln Leu Ser Lys Leu Val Thr Ser Leu Pro Ser Trp Ala Leu
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Leu Thr Asn His Phe Lys Ser Thr Gly Ser Phe Pro Phe Pro Tyr Val
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Pro Arg Ala Leu Arg Leu His Tyr Gly Gln His Gly Gly Glu Arg Pro
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Phe Lys Cys Lys Val Cys Gly Arg Ala Phe Ser Thr Arg Gly Asn Leu
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Arg Ala His Phe Val Gly His Lys Ala Ser Pro Ala Ala Arg Ala Gln
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Asn Ser Cys Pro Ile Cys Gln Lys Lys Phe Thr Asn Ala Val Thr Leu
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Gln Gln His Val Arg Met His Leu Gly Gly Gln Ile Pro Asn Gly Gly
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725 730 735

Gln Ser Thr Val Ser Gly Ala Gly Ser Phe Pro Gln Gln Gln Ser Gln
740 745 750

Gln Pro Ser Pro Glu Glu Glu Leu Ser Glu Glu Glu Glu Glu Asp
755 760 765

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Gly Ser Glu Ser Gly Gly Glu Lys Ala Ile Ser Val Arg Gly Asp Ser
785 790 795 800

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Ser Ser Leu Pro Pro Pro Pro Pro Pro Asp Ser Leu Asp Gln Pro Gln
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Pro Met Glu Gln Gly Ser Ser Gly Val Leu Gly Gly Lys Glu Glu Gly
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Gly Lys Pro Glu Arg Ser Ser Ser Pro Ala Ser Ala Leu Thr Pro Glu
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Gly Glu Ala Thr Ser Val Thr Leu Val Glu Glu Leu Ser Leu Gln Glu
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Ala Met Arg Lys Glu Pro Gly Glu Ser Ser Ser Arg Lys Ala Cys Glu
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Val Cys Gly Gln Ala Phe Pro Ser Gln Ala Ala Leu Glu Glu His Gln
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Lys Thr His Pro Lys Glu Gly Pro Leu Phe Thr Cys Val Phe Cys Arg
930 935 940

Gln Gly Phe Leu Glu Arg Ala Thr Leu Lys Lys His Met Leu Leu Ala
945 950 955 960

His His Gln Asn Gln Tyr Val Ala Phe Leu Ser Asn Gly Leu Pro Met
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Lys Pro Trp Asn Ser Ser Ser Thr Ser Thr Thr Thr Pro Ser Leu Ala
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Pro Pro Val Leu Phe Gly Leu Gly Thr Val Ala Gly Lys Val Pro Pro
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Thr Met Gly Ser Arg Glu Ala Lys Glu Lys Thr Ala Pro Leu Leu
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 Thr Pro Pro Ile Thr Pro Ser Ser Ser Phe Arg Ser Ser Thr Pro Thr
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 Gly Ser Glu Tyr Asp Glu Glu Glu Val Asp Tyr Glu Glu Ser Asp Ser
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 Asp Glu Ser Trp Thr Thr Glu Ser Ala Ile Ser Ser Glu Ala Ile Leu
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Lys Cys Arg Cys Gly Lys Ser Tyr Lys Thr Ala Gln Gly Leu Arg His	
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			20					25					30		

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Glu Leu Gln Gln Pro Thr Tyr Val Ala Leu Ser Tyr Ile Asn Arg Phe
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Met Thr Asp Ala Ala Arg Arg Glu Gln Glu Ser Leu Lys Lys Lys Ile
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Gln Pro Lys Leu Ser Leu Thr Leu Ser Ser Ser Val Ser Arg Gly Asn
85 90 95

Val Ser Thr Pro Pro Arg His Ser Ser Gly Ser Leu Thr Pro Pro Val
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Thr Pro Pro Ile Thr Pro Ser Ser Ser Phe Arg Ser Ser Thr Pro Thr
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Gly Ser Glu Tyr Asp Glu Glu Glu Val Asp Tyr Glu Glu Ser Asp Ser
130 135 140

Asp Glu Ser Trp Thr Thr Glu Ser Ala Ile Ser Ser Glu Ala Ile Leu
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Ser Ser Met Cys Met Asn Gly Gly Glu Glu Lys Pro Phe Ala Cys Pro
165 170 175

Val Pro Gly Cys Lys Lys Arg Tyr Lys Asn Val Asn Gly Ile Lys Tyr
180 185 190

His Ala Lys Asn Gly His Arg Thr Gln Ile Arg Val Arg Lys Pro Phe
195 200 205

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 Asn Gly Cys Arg Leu Pro Arg Arg Gly Arg Arg Arg Gly Gly Arg Arg
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cga act gtg ggc ccc ggc ccc att cat tgc cgt ggc cgg cgg gca ctg 145
 Arg Thr Val Gly Pro Gly Pro Ile His Cys Arg Gly Arg Arg Ala Leu
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ggg ccc cgt gtt ttc aga gtc atg gag gcg cta att cct gtc ata aac 193
 Gly Pro Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn
 50 55 60

aag ctc cag gac gtc ttc aac acg gtg ggc gcc gac atc atc cag ctg 241
 Lys Leu Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu
 65 70 75

cct caa atc gtc gta gtg gga acg cag agc agc gga aag agc tca gtg 289
 Pro Gln Ile Val Val Val Gly Thr Gln Ser Ser Gly Lys Ser Ser Val
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cta gaa agc ctg gtg ggg agg gac ctg ctt ccc aga ggt act gga att 337
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 Val Thr Arg Arg Pro Leu Ile Leu Gln Leu Val His Val Thr Gln Glu
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 Asp Lys Arg Lys Thr Thr Gly Glu Glu Asn Gly Val Glu Ala Glu Glu
 130 135 140

tgg ggt aaa ttt ctt cac acc aaa aat aag ctt tac acg gat ttt gat 481
 Trp Gly Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp
 145 150 155

gaa att cga caa gaa att gaa aat gaa aca gaa aga att tca gga aat 529
 Glu Ile Arg Gln Glu Ile Glu Asn Glu Thr Glu Arg Ile Ser Gly Asn
 160 165 170

aat aag gga gta agc cct gaa cca att cat ctt aag att ttt tca ccc 577
 Asn Lys Gly Val Ser Pro Glu Pro Ile His Leu Lys Ile Phe Ser Pro
 175 180 185 190

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Thr Ala Ile Arg Asn Ala Thr Gly Pro Arg Pro Ala Leu Phe Val Pro	
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Glu Pro Ser Leu Arg Cys Val Glu Leu Val His Glu Glu Met Gln Arg	
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Ile Ile Gln His Cys Ser Asn Tyr Ser Thr Gln Glu Leu Leu Arg Phe	
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Pro Lys Leu His Asp Ala Ile Val Glu Val Val Thr Cys Leu Leu Arg	
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Lys Arg Leu Pro Val Thr Asn Glu Met Val His Asn Leu Val Ala Ile	
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Glu Leu Ala Tyr Ile Asn Thr Lys His Pro Asp Phe Ala Asp Ala Cys	
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Gly Leu Met Asn Asn Asn Ile Glu Glu Gln Arg Arg Asn Arg Leu Ala	
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Arg Glu Leu Pro Ser Ala Val Ser Arg Asp Lys Ser Ser Lys Val Pro	
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Ser Ala Leu Ala Pro Ala Ser Gln Glu Pro Ser Pro Ala Ala Ser Ala	
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Glu Ala Asp Gly Lys Leu Ile Gln Asp Ser Arg Arg Glu Thr Lys Asn	
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Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn Lys Leu
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Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu Pro Gln
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Ile Val Val Val Gly Thr Gln Ser Ser Gly Lys Ser Ser Val Leu Glu
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Ser Leu Val Gly Arg Asp Leu Leu Pro Arg Gly Thr Gly Ile Val Thr
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Arg Arg Pro Leu Ile Leu Gln Leu Val His Val Thr Gln Glu Asp Lys
 115 120 125

Arg Lys Thr Thr Gly Glu Glu Asn Gly Val Glu Ala Glu Glu Trp Gly

130

135

140

Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp Glu Ile
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Arg Gln Glu Ile Glu Asn Glu Thr Glu Arg Ile Ser Gly Asn Asn Lys
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Gly Val Ser Pro Glu Pro Ile His Leu Lys Ile Phe Ser Pro Asn Val
 180 185 190

Val Asn Leu Thr Leu Val Asp Leu Pro Gly Met Thr Lys Val Pro Val
 195 200 205

Gly Asp Gln Pro Lys Asp Ile Glu Leu Gln Ile Arg Glu Leu Ile Leu
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Arg Phe Ile Ser Asn Pro Asn Ser Ile Ile Leu Ala Val Thr Ala Ala
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Asn Thr Asp Met Ala Thr Ser Glu Ala Leu Lys Ile Ser Arg Glu Val
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Asp Pro Asp Gly Arg Arg Thr Leu Ala Val Ile Thr Lys Leu Asp Leu
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Met Asp Ala Gly Thr Asp Ala Met Asp Val Leu Met Gly Arg Val Ile
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Pro Val Lys Leu Gly Ile Ile Gly Val Val Asn Arg Ser Gln Leu Asp
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Ile Asn Asn Lys Lys Ser Val Thr Asp Ser Ile Arg Asp Glu Tyr Ala
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Phe Leu Gln Lys Lys Tyr Pro Ser Leu Ala Asn Arg Asn Gly Thr Lys
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Tyr Leu Ala Arg Thr Leu Asn Arg Leu Leu Met His His Ile Arg Asp
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Cys Leu Pro Glu Leu Lys Thr Arg Ile Asn Val Leu Ala Ala Gln Tyr
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Gln Ser Leu Leu Asn Ser Tyr Gly Glu Pro Val Asp Asp Lys Ser Ala
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Ala Arg Ile Cys Tyr Ile Phe His Glu Thr Phe Gly Arg Thr Leu Glu
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Gln His Cys Ser Asn Tyr Ser Thr Gln Glu Leu Leu Arg Phe Pro Lys
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Glu Glu Lys Ser Lys Pro Ile Pro Ile Met Pro Ala Ser Pro Gln Lys
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675 680 685

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Lys Ala Val Met His Phe Leu Val Asn His Val Lys Asp Thr Leu Gln
725 730 735

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740 745 750

Leu Thr Glu Ser Glu Asp Met Ala Gln Arg Arg Lys Glu Ala Ala Asp
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Asn	Gly	Cys	Arg	Leu	Pro	Arg	Arg	Gly	Arg	Arg	Arg	Gly	Gly	Arg	Arg	
15				20				25						30		

cga	act	gtg	ggc	ccc	ggc	ccc	att	cat	tgc	cgt	ggc	cgg	cgg	gca	ctg	145
Arg	Thr	Val	Gly	Pro	Gly	Pro	Ile	His	Cys	Arg	Gly	Arg	Arg	Ala	Leu	
			35					40						45		

ggg	ccc	cgt	gtt	ttc	aga	gtc	atg	gag	gcg	cta	att	cct	gtc	ata	aac	193
Gly	Pro	Arg	Val	Phe	Arg	Val	Met	Glu	Ala	Leu	Ile	Pro	Val	Ile	Asn	
			50				55						60			

aag	ctc	cag	gac	gtc	ttc	aac	acg	gtg	ggc	gcc	gac	atc	atc	cag	ctg	241
Lys	Leu	Gln	Asp	Val	Phe	Asn	Thr	Val	Gly	Ala	Asp	Ile	Ile	Gln	Leu	
	65					70					75					

cct	caa	atc	gtc	gta	gtg	gga	acg	cag	agc	agc	gga	aag	agc	tca	gtg	289
Pro	Gln	Ile	Val	Val	Val	Gly	Thr	Gln	Ser	Ser	Gly	Lys	Ser	Ser	Val	
	80					85					90					

cta	gaa	agc	ctg	gtg	ggg	agg	gac	ctg	ctt	ccc	aga	ggt	act	gga	att	337
Leu	Glu	Ser	Leu	Val	Gly	Arg	Asp	Leu	Leu	Pro	Arg	Gly	Thr	Gly	Ile	
95				100						105					110	

gtc	acc	cgg	aga	cct	ctc	att	ctg	caa	ctg	gtc	cat	gtg	aca	caa	gaa	385
Val	Thr	Arg	Arg	Pro	Leu	Ile	Leu	Gln	Leu	Val	His	Val	Thr	Gln	Glu	
				115				120						125		

gat	aaa	cgg	aaa	aca	aca	gga	gaa	gaa	aat	ggg	gtg	gaa	gca	gaa	gaa	433
Asp	Lys	Arg	Lys	Thr	Thr	Gly	Glu	Glu	Asn	Gly	Val	Glu	Ala	Glu	Glu	
			130				135						140			

tgg	ggt	aaa	ttt	ctt	cac	acc	aaa	aat	aag	ctt	tac	acg	gat	ttt	gat	481
Trp	Gly	Lys	Phe	Leu	His	Thr	Lys	Asn	Lys	Leu	Tyr	Thr	Asp	Phe	Asp	
		145					150					155				

gaa	att	cga	caa	gaa	att	gaa	aat	gaa	aca	gaa	aga	att	tca	gga	aat	529
Glu	Ile	Arg	Gln	Glu	Ile	Glu	Asn	Glu	Thr	Glu	Arg	Ile	Ser	Gly	Asn	
	160					165					170					

aat	aag	gga	gta	agc	cct	gaa	cca	att	cat	ctt	aag	att	ttt	tca	ccc	577
Asn	Lys	Gly	Val	Ser	Pro	Glu	Pro	Ile	His	Leu	Lys	Ile	Phe	Ser	Pro	
175					180					185					190	

aac	gtt	gtc	aat	ttg	aca	ctt	gtg	gat	ttg	cca	gga	atg	acc	aag	gtg	625
Asn	Val	Val	Asn	Leu	Thr	Leu	Val	Asp	Leu	Pro	Gly	Met	Thr	Lys	Val	

195	200	205	
cct gta ggt gat caa cct aag gat att gag ctt caa atc aga gag ctc Pro Val Gly Asp Gln Pro Lys Asp Ile Glu Leu Gln Ile Arg Glu Leu 210 215 220			673
att ctt cgg ttc atc agt aat cct aat tcc att atc ctc gct gtc act Ile Leu Arg Phe Ile Ser Asn Pro Asn Ser Ile Ile Leu Ala Val Thr 225 230 235			721
gct gct aat aca gat atg gca aca tca gag gca ctt aaa att tca aga Ala Ala Asn Thr Asp Met Ala Thr Ser Glu Ala Leu Lys Ile Ser Arg 240 245 250			769
gag gta gat cca gat ggt cgc aga acc cta gct gta atc act aaa ctt Glu Val Asp Pro Asp Gly Arg Arg Thr Leu Ala Val Ile Thr Lys Leu 255 260 265 270			817
gat ctc atg gat gcg ggt act gat gcc atg gat gta ttg atg gga agg Asp Leu Met Asp Ala Gly Thr Asp Ala Met Asp Val Leu Met Gly Arg 275 280 285			865
gtt att cca gtc aaa ctt gga ata att gga gta gtt aac agg agc cag Val Ile Pro Val Lys Leu Gly Ile Ile Gly Val Val Asn Arg Ser Gln 290 295 300			913
cta gat att aac aac aag aag agt gta act gat tca atc cgt gat gag Leu Asp Ile Asn Asn Lys Lys Ser Val Thr Asp Ser Ile Arg Asp Glu 305 310 315			961
tat gct ttt ctt caa aag aaa tat cca tct ctg gcc aat aga aat gga Tyr Ala Phe Leu Gln Lys Lys Tyr Pro Ser Leu Ala Asn Arg Asn Gly 320 325 330			1009
aca aag tat ctt gct agg act cta aac agg tta ctg atg cat cac atc Thr Lys Tyr Leu Ala Arg Thr Leu Asn Arg Leu Leu Met His His Ile 335 340 345 350			1057
aga gat tgt tta cca gag ttg aaa aca aga ata aat gtt cta gct gct Arg Asp Cys Leu Pro Glu Leu Lys Thr Arg Ile Asn Val Leu Ala Ala 355 360 365			1105
cag tat cag tct ctt cta aat agc tac ggt gaa ccc gtg gat gat aaa Gln Tyr Gln Ser Leu Leu Asn Ser Tyr Gly Glu Pro Val Asp Asp Lys 370 375 380			1153
agt gct act tta ctc caa ctt att acc aaa ttt gcc aca gaa tat tgt Ser Ala Thr Leu Leu Gln Leu Ile Thr Lys Phe Ala Thr Glu Tyr Cys 385 390 395			1201
aac act att gaa gga act gca aaa tat att gaa act tcg gag cta tgc Asn Thr Ile Glu Gly Thr Ala Lys Tyr Ile Glu Thr Ser Glu Leu Cys 400 405 410			1249
ggg ggt gct aga att tgt tat att ttc cat gag act ttt ggg cga acc Gly Gly Ala Arg Ile Cys Tyr Ile Phe His Glu Thr Phe Gly Arg Thr 415 420 425 430			1297

tta gaa tct gtt gat cca ctt ggt ggc ctt aac act att gac att ttg Leu Glu Ser Val Asp Pro Leu Gly Gly Leu Asn Thr Ile Asp Ile Leu 435 440 445	1345
act gcc att aga aat gct act ggt cct cgt cct gct tta ttt gtg cct Thr Ala Ile Arg Asn Ala Thr Gly Pro Arg Pro Ala Leu Phe Val Pro 450 455 460	1393
gag gtt tca ttt gag tta ctg gtg aag cgg caa atc aaa cgt cta gaa Glu Val Ser Phe Glu Leu Leu Val Lys Arg Gln Ile Lys Arg Leu Glu 465 470 475	1441
gag ccc agc ctc cgc tgt gtg gaa ctg gtt cat gag gaa atg caa agg Glu Pro Ser Leu Arg Cys Val Glu Leu Val His Glu Glu Met Gln Arg 480 485 490	1489
atc att cag cac tgt agc aat tac agt aca cag gaa ttg tta cga ttt Ile Ile Gln His Cys Ser Asn Tyr Ser Thr Gln Glu Leu Leu Arg Phe 495 500 505 510	1537
cct aaa ctt cat gat gcc ata gtt gaa gtg gtg act tgt ctt ctt cgt Pro Lys Leu His Asp Ala Ile Val Glu Val Val Thr Cys Leu Leu Arg 515 520 525	1585
aaa agg ttg cct gtt aca aat gaa atg gtc cat aac tta gtg gca att Lys Arg Leu Pro Val Thr Asn Glu Met Val His Asn Leu Val Ala Ile 530 535 540	1633
gaa ctg gct tat atc aac aca aaa cat cca gac ttt gct gat gct tgt Glu Leu Ala Tyr Ile Asn Thr Lys His Pro Asp Phe Ala Asp Ala Cys 545 550 555	1681
ggg cta atg aac aat aat ata gag gaa caa agg aga aac agg cta gcc Gly Leu Met Asn Asn Asn Ile Glu Glu Gln Arg Arg Asn Arg Leu Ala 560 565 570	1729
aga gaa tta cct tca gct gta tca cga gac aag tta att cag gac agc Arg Glu Leu Pro Ser Ala Val Ser Arg Asp Lys Leu Ile Gln Asp Ser 575 580 585 590	1777
aga aga gaa act aaa aat gtt gca tct gga ggt ggt ggg gtt gga gat Arg Arg Glu Thr Lys Asn Val Ala Ser Gly Gly Gly Gly Val Gly Asp 595 600 605	1825
ggt gtt caa gaa cca acc aca ggc aac tgg aga gga atg ctg aaa act Gly Val Gln Glu Pro Thr Thr Gly Asn Trp Arg Gly Met Leu Lys Thr 610 615 620	1873
tca aaa gct gaa gag tta tta gca gaa gaa aaa tca aaa ccc att cca Ser Lys Ala Glu Glu Leu Leu Ala Glu Glu Lys Ser Lys Pro Ile Pro 625 630 635	1921
att atg cca gcc agt cca caa aaa ggt cat gcc gtg aac ctg cta gat Ile Met Pro Ala Ser Pro Gln Lys Gly His Ala Val Asn Leu Leu Asp 640 645 650	1969

gtg cca gtt cct gtt gca cga aaa cta tct gct cgg gaa cag cga gat	2017
Val Pro Val Pro Val Ala Arg Lys Leu Ser Ala Arg Glu Gln Arg Asp	
655 660 665 670	
tgt gag gtt att gaa cga ctc att aaa tca tat ttt ctc att gtc aga	2065
Cys Glu Val Ile Glu Arg Leu Ile Lys Ser Tyr Phe Leu Ile Val Arg	
675 680 685	
aag aat att caa gac agt gtg cca aag gca gta atg cat ttt ttg gtt	2113
Lys Asn Ile Gln Asp Ser Val Pro Lys Ala Val Met His Phe Leu Val	
690 695 700	
aat cat gtg aaa gac act ctt cag agt gag cta gta ggc cag ctg tat	2161
Asn His Val Lys Asp Thr Leu Gln Ser Glu Leu Val Gly Gln Leu Tyr	
705 710 715	
aaa tca tcc tta ttg gat gat ctt ctg aca gaa tct gag gac atg gca	2209
Lys Ser Ser Leu Leu Asp Asp Leu Leu Thr Glu Ser Glu Asp Met Ala	
720 725 730	
cag cgc agg aaa gaa gca gct gat atg cta aag gca tta caa gga gcc	2257
Gln Arg Arg Lys Glu Ala Ala Asp Met Leu Lys Ala Leu Gln Gly Ala	
735 740 745 750	
agt caa att att gct gaa atc cgg gag act cat ctt tgg tga	2299
Ser Gln Ile Ile Ala Glu Ile Arg Glu Thr His Leu Trp	
755 760	
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agtagaatct tatttatgaa ctctgtgta ttgcaatggt atgaatctgc tcatgtggag	2419
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 <212> PRT
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<400> 20

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			20				25					30			

Val	Gly	Pro	Gly	Pro	Ile	His	Cys	Arg	Gly	Arg	Arg	Ala	Leu	Gly	Pro
		35					40					45			

Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn Lys Leu

50

55

60

Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu Pro Gln
65 70 75 80

Ile Val Val Val Gly Thr Gln Ser Ser Gly Lys Ser Ser Val Leu Glu
85 90 95

Ser Leu Val Gly Arg Asp Leu Leu Pro Arg Gly Thr Gly Ile Val Thr
100 105 110

Arg Arg Pro Leu Ile Leu Gln Leu Val His Val Thr Gln Glu Asp Lys
115 120 125

Arg Lys Thr Thr Gly Glu Glu Asn Gly Val Glu Ala Glu Glu Trp Gly
130 135 140

Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp Glu Ile
145 150 155 160

Arg Gln Glu Ile Glu Asn Glu Thr Glu Arg Ile Ser Gly Asn Asn Lys
165 170 175

Gly Val Ser Pro Glu Pro Ile His Leu Lys Ile Phe Ser Pro Asn Val
180 185 190

Val Asn Leu Thr Leu Val Asp Leu Pro Gly Met Thr Lys Val Pro Val
195 200 205

Gly Asp Gln Pro Lys Asp Ile Glu Leu Gln Ile Arg Glu Leu Ile Leu
210 215 220

Arg Phe Ile Ser Asn Pro Asn Ser Ile Ile Leu Ala Val Thr Ala Ala
225 230 235 240

Asn Thr Asp Met Ala Thr Ser Glu Ala Leu Lys Ile Ser Arg Glu Val
245 250 255.

Asp Pro Asp Gly Arg Arg Thr Leu Ala Val Ile Thr Lys Leu Asp Leu
260 265 270

Met Asp Ala Gly Thr Asp Ala Met Asp Val Leu Met Gly Arg Val Ile
275 280 285

Pro Val Lys Leu Gly Ile Ile Gly Val Val Asn Arg Ser Gln Leu Asp
290 295 300

Ile Asn Asn Lys Lys Ser Val Thr Asp Ser Ile Arg Asp Glu Tyr Ala
305 310 315 320

Phe Leu Gln Lys Lys Tyr Pro Ser Leu Ala Asn Arg Asn Gly Thr Lys
325 330 335

Tyr Leu Ala Arg Thr Leu Asn Arg Leu Leu Met His His Ile Arg Asp
340 345 350

Cys Leu Pro Glu Leu Lys Thr Arg Ile Asn Val Leu Ala Ala Gln Tyr
355 360 365

Gln Ser Leu Leu Asn Ser Tyr Gly Glu Pro Val Asp Asp Lys Ser Ala
370 375 380

Thr Leu Leu Gln Leu Ile Thr Lys Phe Ala Thr Glu Tyr Cys Asn Thr
385 390 395 400

Ile Glu Gly Thr Ala Lys Tyr Ile Glu Thr Ser Glu Leu Cys Gly Gly
405 410 415

Ala Arg Ile Cys Tyr Ile Phe His Glu Thr Phe Gly Arg Thr Leu Glu
420 425 430

Ser Val Asp Pro Leu Gly Gly Leu Asn Thr Ile Asp Ile Leu Thr Ala
435 440 445

Ile Arg Asn Ala Thr Gly Pro Arg Pro Ala Leu Phe Val Pro Glu Val
450 455 460

Ser Phe Glu Leu Leu Val Lys Arg Gln Ile Lys Arg Leu Glu Glu Pro
465 470 475 480

Ser Leu Arg Cys Val Glu Leu Val His Glu Glu Met Gln Arg Ile Ile
485 490 495

Gln His Cys Ser Asn Tyr Ser Thr Gln Glu Leu Leu Arg Phe Pro Lys
500 505 510

Leu His Asp Ala Ile Val Glu Val Val Thr Cys Leu Leu Arg Lys Arg
515 520 525

Leu Pro Val Thr Asn Glu Met Val His Asn Leu Val Ala Ile Glu Leu
530 535 540

Ala Tyr Ile Asn Thr Lys His Pro Asp Phe Ala Asp Ala Cys Gly Leu
545 550 555 560

Met Asn Asn Asn Ile Glu Glu Gln Arg Arg Asn Arg Leu Ala Arg Glu
565 570 575

Leu Pro Ser Ala Val Ser Arg Asp Lys Leu Ile Gln Asp Ser Arg Arg
580 585 590

Glu Thr Lys Asn Val Ala Ser Gly Gly Gly Gly Val Gly Asp Gly Val
595 600 605

Gln Glu Pro Thr Thr Gly Asn Trp Arg Gly Met Leu Lys Thr Ser Lys
610 615 620

Ala Glu Glu Leu Leu Ala Glu Glu Lys Ser Lys Pro Ile Pro Ile Met
625 630 635 640

Pro Ala Ser Pro Gln Lys Gly His Ala Val Asn Leu Leu Asp Val Pro
645 650 655

Val Pro Val Ala Arg Lys Leu Ser Ala Arg Glu Gln Arg Asp Cys Glu
660 665 670

Val Ile Glu Arg Leu Ile Lys Ser Tyr Phe Leu Ile Val Arg Lys Asn
675 680 685

Ile Gln Asp Ser Val Pro Lys Ala Val Met His Phe Leu Val Asn His
690 695 700

Val Lys Asp Thr Leu Gln Ser Glu Leu Val Gly Gln Leu Tyr Lys Ser
705 710 715 720

Ser Leu Leu Asp Asp Leu Leu Thr Glu Ser Glu Asp Met Ala Gln Arg
725 730 735

Arg Lys Glu Ala Ala Asp Met Leu Lys Ala Leu Gln Gly Ala Ser Gln
740 745 750

Ile Ile Ala Glu Ile Arg Glu Thr His Leu Trp
755 760

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<212> DNA
<213> Homo sapiens

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<223>

<400> 21
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aat ggg tgc cgg ctt ccg agg aga ggg cgg agg aga gga gga agg agg 97
Asn Gly Cys Arg Leu Pro Arg Arg Gly Arg Arg Gly Gly Arg Arg
15 20 25 30
cga act gtg ggc ccc ggc ccc att cat tgc cgt ggc cgg cgg gca ctg 145
Arg Thr Val Gly Pro Gly Pro Ile His Cys Arg Gly Arg Arg Ala Leu
35 40 45
ggg ccc cgt gtt ttc aga gtc atg gag gcg cta att cct gtc ata aac 193
Gly Pro Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn
50 55 60
aag ctc cag gac gtc ttc aac acg gtg ggc gcc gac atc atc cag ctg 241
Lys Leu Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu
65 70 75
cct caa atc gtc gta gtg gga acg cag agc agc gga aag agc tca gtg 289
Pro Gln Ile Val Val Val Gly Thr Gln Ser Ser Gly Lys Ser Ser Val
80 85 90
cta gaa agc ctg gtg ggg agg gac ctg ctt ccc aga ggt act gga att 337
Leu Glu Ser Leu Val Gly Arg Asp Leu Leu Pro Arg Gly Thr Gly Ile
95 100 105 110
gtc acc cgg aga cct ctc att ctg caa ctg gtc cat gtg aca caa gaa 385
Val Thr Arg Arg Pro Leu Ile Leu Gln Leu Val His Val Thr Gln Glu
115 120 125
gat aaa cgg aaa aca aca gga gaa gaa aat ggg gtg gaa gca gaa gaa 433
Asp Lys Arg Lys Thr Thr Gly Glu Glu Asn Gly Val Glu Ala Glu Glu
130 135 140
tgg ggt aaa ttt ctt cac acc aaa aat aag ctt tac acg gat ttt gat 481
Trp Gly Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp

145	150	155	
gaa att cga caa gaa att gaa aat gaa aca gaa aga att tca gga aat Glu Ile Arg Gln Glu Ile Glu Asn Glu Thr Glu Arg Ile Ser Gly Asn 160 165 170			529
aat aag gga gta agc cct gaa cca att cat ctt aag att ttt tca ccc Asn Lys Gly Val Ser Pro Glu Pro Ile His Leu Lys Ile Phe Ser Pro 175 180 185 190			577
aac gtt gtc aat ttg aca ctt gtg gat ttg cca gga atg acc aag gtg Asn Val Val Asn Leu Thr Leu Val Asp Leu Pro Gly Met Thr Lys Val 195 200 205			625
cct gta ggt gat caa cct aag gat att gag ctt caa atc aga gag ctc Pro Val Gly Asp Gln Pro Lys Asp Ile Glu Leu Gln Ile Arg Glu Leu 210 215 220			673
att ctt cgg ttc atc agt aat cct aat tcc att atc ctc gct gtc act Ile Leu Arg Phe Ile Ser Asn Pro Asn Ser Ile Ile Leu Ala Val Thr 225 230 235			721
gct gct aat aca gat atg gca aca tca gag gca ctt aaa att tca aga Ala Ala Asn Thr Asp Met Ala Thr Ser Glu Ala Leu Lys Ile Ser Arg 240 245 250			769
gag gta gat cca gat ggc tgc aga acc cta gct gta atc act aaa ctt Glu Val Asp Pro Asp Gly Cys Arg Thr Leu Ala Val Ile Thr Lys Leu 255 260 265 270			817
gat ctc atg gat gcg ggt act gat gcc atg gat gta ttg atg gga agg Asp Leu Met Asp Ala Gly Thr Asp Ala Met Asp Val Leu Met Gly Arg 275 280 285			865
gtt att cca gtc aaa ctt gga ata att gga gta gtt aac agg agc cag Val Ile Pro Val Lys Leu Gly Ile Ile Gly Val Val Asn Arg Ser Gln 290 295 300			913
cta gat att aac aac aag aag agt gta act gat tca atc cgt gat gag Leu Asp Ile Asn Asn Lys Lys Ser Val Thr Asp Ser Ile Arg Asp Glu 305 310 315			961
tat gct ttt ctt caa aag aaa tat cca tct ctg gcc aat aga aat gga Tyr Ala Phe Leu Gln Lys Lys Tyr Pro Ser Leu Ala Asn Arg Asn Gly 320 325 330			1009
aca aag tat ctt gct agg act cta aac agg tta ctg atg cat cac atc Thr Lys Tyr Leu Ala Arg Thr Leu Asn Arg Leu Leu Met His His Ile 335 340 345 350			1057
aga gat tgt tta cca gag ttg aaa aca aga ata aat gtt cta gct gct Arg Asp Cys Leu Pro Glu Leu Lys Thr Arg Ile Asn Val Leu Ala Ala 355 360 365			1105
cag tat cag tct ctt cta aat agc tac ggt gaa ccc gtg gat gat aaa Gln Tyr Gln Ser Leu Leu Asn Ser Tyr Gly Glu Pro Val Asp Asp Lys 370 375 380			1153

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Ser Ala Thr Leu Leu Gln Leu Ile Thr Lys Phe Ala Thr Glu Tyr Cys	
385 390 395	
aac act att gaa gga act gca aaa tat att gaa act tcg gag cta tgc	1249
Asn Thr Ile Glu Gly Thr Ala Lys Tyr Ile Glu Thr Ser Glu Leu Cys	
400 405 410	
ggt ggt gct aga att tgt tat att ttc cat gag act ttt ggg cga acc	1297
Gly Gly Ala Arg Ile Cys Tyr Ile Phe His Glu Thr Phe Gly Arg Thr	
415 420 425 430	
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Leu Glu Ser Val Asp Pro Leu Gly Gly Leu Asn Thr Ile Asp Ile Leu	
435 440 445	
act gcc att aga aat gct act ggt cct cgt cct gct tta ttt gtg cct	1393
Thr Ala Ile Arg Asn Ala Thr Gly Pro Arg Pro Ala Leu Phe Val Pro	
450 455 460	
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Glu Val Ser Phe Glu Leu Leu Val Lys Arg Gln Ile Lys Arg Leu Glu	
465 470 475	
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Glu Pro Ser Leu Arg Cys Val Glu Leu Val His Glu Glu Met Gln Arg	
480 485 490	
atc att cag cac tgt agc aat tac agt aca cag gaa ttg tta cga ttt	1537
Ile Ile Gln His Cys Ser Asn Tyr Ser Thr Gln Glu Leu Leu Arg Phe	
495 500 505 510	
cct aaa ctt cat gat gcc ata gtt gaa gtg gtg act tgt ctt ctt cgt	1585
Pro Lys Leu His Asp Ala Ile Val Glu Val Val Thr Cys Leu Leu Arg	
515 520 525	
aaa agg ttg cct gtt aca aat gaa atg gtc cat aac tta gtg gca att	1633
Lys Arg Leu Pro Val Thr Asn Glu Met Val His Asn Leu Val Ala Ile	
530 535 540	
gaa ctg gct tat atc aac aca aaa cat cca gac ttt gct gat gct tgt	1681
Glu Leu Ala Tyr Ile Asn Thr Lys His Pro Asp Phe Ala Asp Ala Cys	
545 550 555	
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Gly Leu Met Asn Asn Asn Ile Glu Glu Gln Arg Arg Asn Arg Leu Ala	
560 565 570	
aga gaa tta cct tca gct gta tca cga gac aag gtt gca tct gga ggt	1777
Arg Glu Leu Pro Ser Ala Val Ser Arg Asp Lys Val Ala Ser Gly Gly	
575 580 585 590	
ggt ggg gtt gga gat ggt gtt caa gaa cca acc aca ggc aac tgg aga	1825
Gly Gly Val Gly Asp Gly Val Gln Glu Pro Thr Thr Gly Asn Trp Arg	
595 600 605	

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Gly Met Leu Lys Thr Ser Lys Ala Glu Glu Leu Leu Ala Glu Glu Lys	
610 615 620	
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Ser Lys Pro Ile Pro Ile Met Pro Ala Ser Pro Gln Lys Gly His Ala	
625 630 635	
gtg aac ctg cta gat gtg cca gtt cct gtt gca cga aaa cta tct gct	1969
Val Asn Leu Leu Asp Val Pro Val Pro Val Ala Arg Lys Leu Ser Ala	
640 645 650	
cgg gaa cag cga gat tgt gag gtt att gaa cga ctc att aaa tca tat	2017
Arg Glu Gln Arg Asp Cys Glu Val Ile Glu Arg Leu Ile Lys Ser Tyr	
655 660 665 670	
ttt ctc att gtc aga aag aat att caa gac agt gtg cca aag gca gta	2065
Phe Leu Ile Val Arg Lys Asn Ile Gln Asp Ser Val Pro Lys Ala Val	
675 680 685	
atg cat ttt ttg gtt aat cat gtg aaa gac act ctt cag agt gag cta	2113
Met His Phe Leu Val Asn His Val Lys Asp Thr Leu Gln Ser Glu Leu	
690 695 700	
gta ggc cag ctg tat aaa tca tcc tta ttg gat gat ctt ctg aca gaa	2161
Val Gly Gln Leu Tyr Lys Ser Ser Leu Leu Asp Asp Leu Leu Thr Glu	
705 710 715	
tct gag gac atg gca cag cgc agg aaa gaa gca gct gat atg cta aag	2209
Ser Glu Asp Met Ala Gln Arg Arg Lys Glu Ala Ala Asp Met Leu Lys	
720 725 730	
gca tta caa gga gcc agt caa att att gct gaa atc cgg gag act cat	2257
Ala Leu Gln Gly Ala Ser Gln Ile Ile Ala Glu Ile Arg Glu Thr His	
735 740 745 750	
ctt tgg tga agagaactat gtaatactga gactttgttg actcaaaaact	2306
Leu Trp	
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<210> 22
 <211> 752
 <212> PRT
 <213> Homo sapiens

<400> 22

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Val Gly Pro Gly Pro Ile His Cys Arg Gly Arg Arg Ala Leu Gly Pro	35	40	45
Arg Val Phe Arg Val Met Glu Ala Leu Ile Pro Val Ile Asn Lys Leu	50	55	60
Gln Asp Val Phe Asn Thr Val Gly Ala Asp Ile Ile Gln Leu Pro Gln	65	70	75
Ile Val Val Val Gly Thr Gln Ser Ser Gly Lys Ser Ser Val Leu Glu	85	90	95
Ser Leu Val Gly Arg Asp Leu Leu Pro Arg Gly Thr Gly Ile Val Thr	100	105	110
Arg Arg Pro Leu Ile Leu Gln Leu Val His Val Thr Gln Glu Asp Lys	115	120	125
Arg Lys Thr Thr Gly Glu Glu Asn Gly Val Glu Ala Glu Glu Trp Gly	130	135	140
Lys Phe Leu His Thr Lys Asn Lys Leu Tyr Thr Asp Phe Asp Glu Ile	145	150	155
Arg Gln Glu Ile Glu Asn Glu Thr Glu Arg Ile Ser Gly Asn Asn Lys	165	170	175
Gly Val Ser Pro Glu Pro Ile His Leu Lys Ile Phe Ser Pro Asn Val	180	185	190
Val Asn Leu Thr Leu Val Asp Leu Pro Gly Met Thr Lys Val Pro Val	195	200	205
Gly Asp Gln Pro Lys Asp Ile Glu Leu Gln Ile Arg Glu Leu Ile Leu	210	215	220
Arg Phe Ile Ser Asn Pro Asn Ser Ile Ile Leu Ala Val Thr Ala Ala	225	230	235
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Asn Thr Asp Met Ala Thr Ser Glu Ala Leu Lys Ile Ser Arg Glu Val
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Ile Glu Gly Thr Ala Lys Tyr Ile Glu Thr Ser Glu Leu Cys Gly Gly
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Ser Val Asp Pro Leu Gly Gly Leu Asn Thr Ile Asp Ile Leu Thr Ala
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Ala Tyr Ile Asn Thr Lys His Pro Asp Phe Ala Asp Ala Cys Gly Leu
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Cys Met Arg Ser Arg Asn Pro Asp Glu Ser Ala Lys Leu Ala Asp Ser	
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